

Manager-Assistant IP Phone Setup

Abstract

This Technical Report discusses manager-assistant IP phone setup relying on Linksys IP phones.

Keywords: VoIP, SIP, IP telephony, SER, OpenSER, Asterisk, provisioning, Linksys

Manager-Assistant Setup Description

Managers are frequently occupied and easily disturbed by incoming calls. That is why an assistant's phone is typically connected first in the line, allowing assistants to “filter” some of the calls. This is referred to as the Manager-Assistant Setup. Incoming calls are picked up by the assistant, who tries to handle it. In case it proves necessary for the caller to talk to the manager, the assistant notifies the manager and forwards the call. As an important feature, calls coming to other than the personal number of the manager – i. e. those handled primarily by the assistant – must be signaled only by a flashing light on the manager's phone so that the manager is not disturbed by ringing.

Choosing an IP phone

Linksys IP phones SPA942, SPA962 and SPA525 can be used in a manager-assistant setup. Among all the criteria, the most important one is the number of simultaneous lines supported by the phone. For example, SPA942 supports four lines and can only be used in a setup with one manager and one assistant. Linksys SPA962 supports six lines and could be used – with certain limitations (fast-call buttons on an SPA932 extension module) – in setups with up to five managers and sixty nine assistants (the only limitation is the number of fast-call buttons: two times thirty two lines on the SPA932 extension plus five lines on the SPA962 phone, yielding the theoretical maximum of 69).

As a next step, rather more complicated, the process of using IP phones in the manager-assistant setup must be defined. Several types of setup and phone number of combinations will be demonstrated.

Manager-Assistant Setup – Type A

The first example involves a setup with one manager and one assistant: “Type A.” It includes two personal lines and two non-personal lines (Secretariat, Management). Phone numbers are shown in Table 1.

	Phone Number
Secretariat	2701
Management	2700
Assistant's personal number	2804
Manager's personal number	2805

Table 1 – Phone numbers, Type A

The setup will consist of two Linksys SPA962 IP phones with one SPA932 extension module (Fig. 1), that can be used for up to 32 fast-call numbers.



Fig. 1 – Linksys SPA962 IP phone with SPA932 extension module

IP phone setup follows the outline given in Fig. 2. The first line handled by the assistant's phone is a non-personal line of the Secretariat with ringing activated and missed call recording deactivated. Second comes a non-personal line of the Management with ringing activated and missed call recording deactivated, third line is the assistant's personal line with both ringing and missed call recording activated, and the fourth line is a personal line of the manager with both ringing and missed call recording deactivated. Finally, the sixth line is used for direct connection with the manager, controlled by a fast-call button.

The first line on the manager's phone is a non-personal line with deactivated ringing and missed call recording. The second line is the manager's personal line with both ringing and missed call recording active. The final sixth line is used for direct connection with the assistant, controlled by a fast-call button.

In Figure 2, the bell symbol denotes lines with ringing activated and the light bulb symbol shows lines with optical signalization of an incoming call. Lines with active recording of missed calls are labeled with the 'H' symbol.

The manager's personal line is enabled on the assistant's IP phone to allow that the assistant to handle incoming calls on that line in the manager's absence.

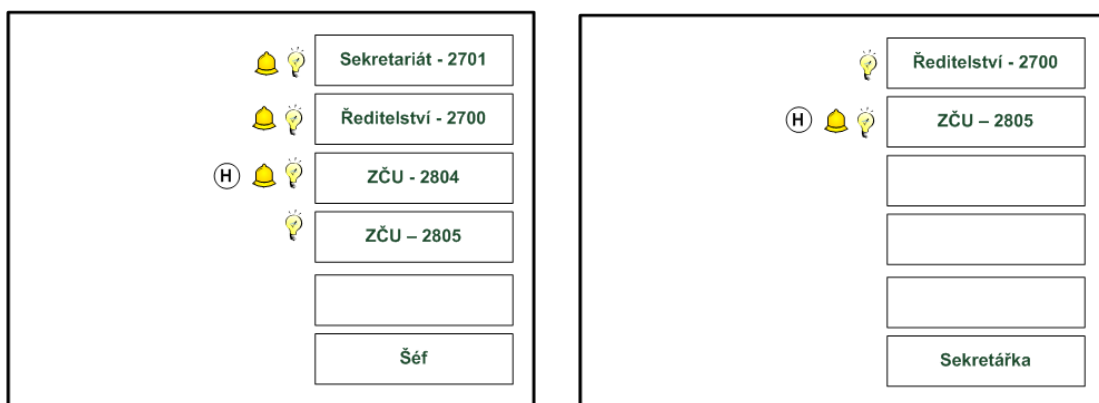


Fig. 2 – Lines in a Type A setup – assistant's phone on the left, manager's phone on the right

Incoming calls to Secretariat (2701) will be indicated by ringing and flashing light on the assistant's phone while the manager's phone will not indicate anything. Incoming calls to Management (2700) will be indicated by ringing and flashing light on the assistant's phone and by flashing on the manager's phone. Incoming calls to the assistant's personal line (2804) will be indicated by ringing and flashing light on the assistant's phone while the manager's phone will not indicate anything. Incoming calls to the manager's personal line (2805) will be indicated by a flashing light on the assistant's phone and by ringing and optical signalization on the manager's phone.

Recording of missed calls must be deactivated for the non-personal lines of the Secretariat and Management on both phones, and for the manager's personal line on the assistant's phone. This is necessary to avoid duplicity in handling missed calls as neither the manager nor the assistant have the means to know if the other has already handled it. Besides that, records of calls picked up by the assistant would still be kept as missed on the manager's phone and vice versa unless that feature is deactivated.

The design for the setup also needs to consider outgoing calls. Identification of the caller is based on the phone's first line. As a result, outgoing calls from the assistant's phone will be identified as calls originating from the Secretariat (2701), making it easy to call back. This is very important, especially in setups with more than one assistant as calls coming back to the original number will be indicated to all of them. Calls outgoing from the manager's phone will be identified as originating from Management (2700) and calls coming back will be answered by the assistant.

Example XML configuration in the assistant's phone:

- deactivate ringing for the manager's personal line (line No. 5):

```
<Default_Ring__5__ group="Ext_5/Call_Feature_Settings">No Ring</Default_Ring__5__>
```

- deactivate recording of missed calls in lines 1, 2, 3 and 5:

```
<Log_Missed_Calls_for_EXT_1 group="User/Supplementary_Services">No</Log_Missed_Calls_for_EXT_1>  
<Log_Missed_Calls_for_EXT_2 group="User/Supplementary_Services">No</Log_Missed_Calls_for_EXT_2>  
<Log_Missed_Calls_for_EXT_3 group="User/Supplementary_Services">No</Log_Missed_Calls_for_EXT_3>  
<Log_Missed_Calls_for_EXT_5 group="User/Supplementary_Services">No</Log_Missed_Calls_for_EXT_5>
```

- setup fast-call to the manager (line No. 6):

```
<Extended_Function_6_ group="Phone/Line_Key_6">fnc=sd;ext=2805@zcu.cz;vid=1</Extended_Function_6_>
```

Example XML configuration in the manager's phone:

- deactivate ringing for the Management line (line No. 1):

```
<Default_Ring__1__ group="Ext_1/Call_Feature_Settings">No Ring</Default_Ring__1__>
```

- deactivate recording of missed calls in the Management line (line No. 1):

```
<Log_Missed_Calls_for_EXT_1 group="User/Supplementary_Services">No</Log_Missed_Calls_for_EXT_1>
```

- setup fast-call to the assistant (line No. 6):

```
<Extended_Function_6_ group="Phone/Line_Key_6">fnc=sd;ext=2804@zcu.cz;vid=1</Extended_Function_6_>
```

Manager-Assistant Setup – Type B

Another example involves a setup with one manager and two assistants. There will be two non-personal lines of the Secretariat and Management. And overview of phone numbers is given in Table 2.

	Phone Number
Secretariat	2701
Management	2700
Personal number – Assistant I	2803
Personal number – Assistant II	2804
Personal number – Manager	2805

Table 2 – Phone numbers, Type B

The setup will comprise of three Linksys SPA962 IP phones with the SPA932 extension module. Configuration of individual lines is shown in Figure 3.

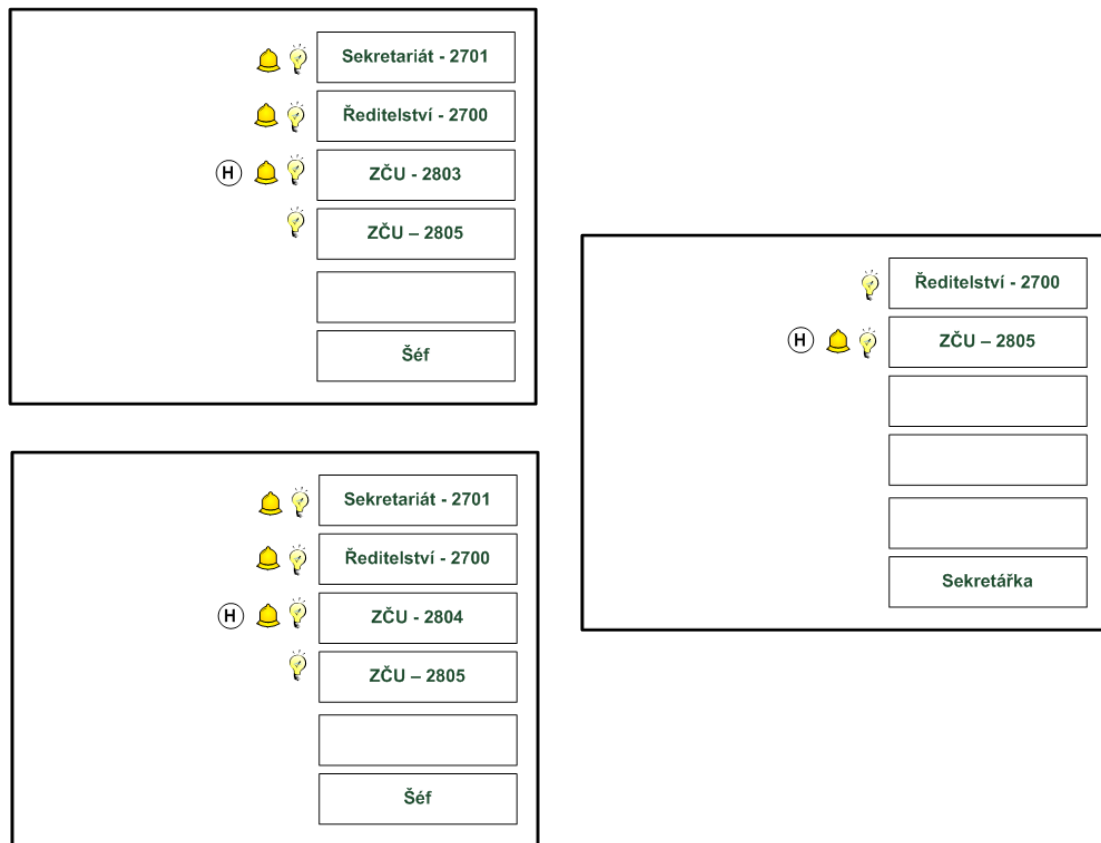


Fig. 3 – Lines in a Type B setup – 1st assistant's phone on the top left, 2nd assistant's phone on the bottom left, manager's phone on the right

Calling and functions of the phones are identical to those in Type A setup, extended with assistant II, who cooperates with assistant I in answering calls to Secretariat and to the manager's personal line in case of the manager's absence.

Manager-Assistant Setup – Type C

The third example involves a setup with two managers and one assistant. There will be two non-personal lines of the Secretariat and Management. And overview of phone numbers is given in Table 3.

	Phone Number
Secretariat	2701
Management	2700
Personal number – Assistant	2803
Personal number – Manager I	2805
Personal number – Manager II	2806

Table 3 – Phone numbers, Type C

The setup will comprise of three Linksys SPA962 IP phones with the SPA932 extension module. Configuration of individual lines is shown in Figure 4.

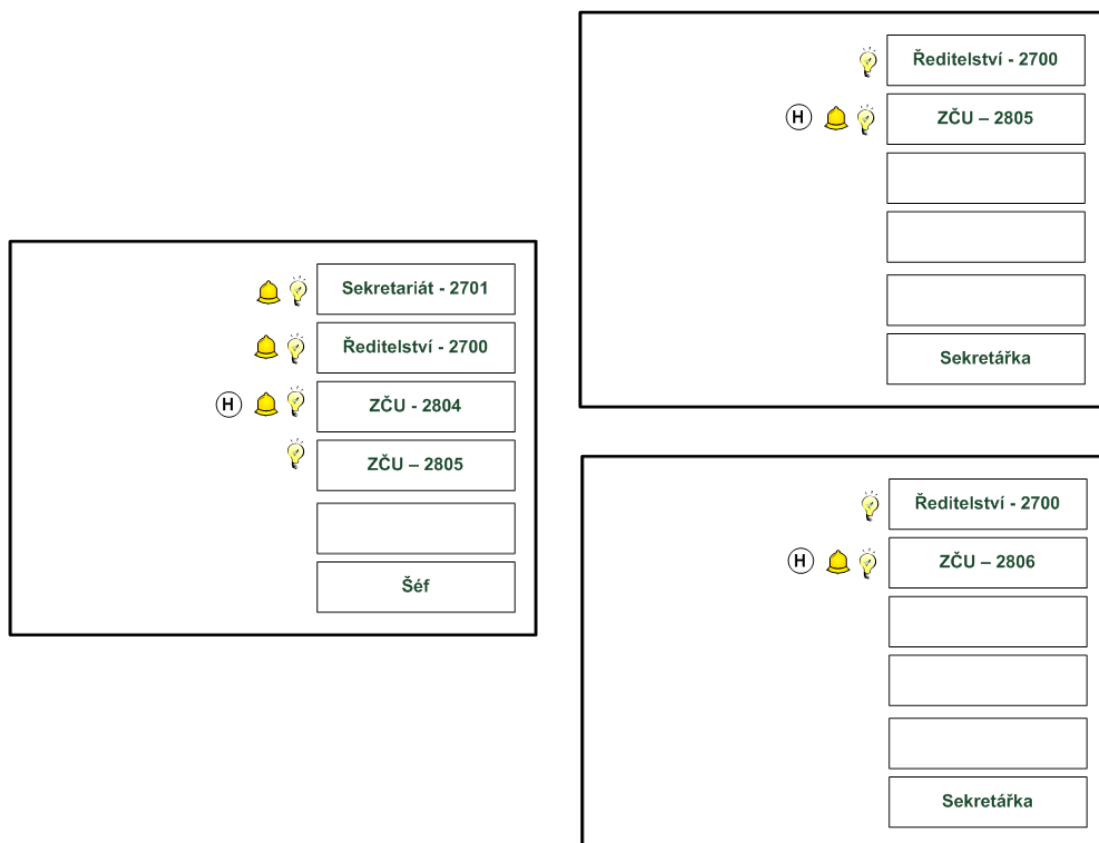


Fig. 4 – Lines in a Type C setup – assistant's phone on the left, 1st manager's phone on the top right, 2nd manager's phone on the bottom right

Calling and functions of the phones are identical to those in Type A setup, extended with manager II, who shares the assistant with the first manager. The assistant answers calls to the Secretariat, Management, and calls to the managers' personal lines in case of their absence.

Manager-Assistant Setup – Type D

The fourth example involves a minimalistic setup with one manager, one assistant, and a single non-personal line of the Management. And overview of phone numbers is given in Table 4.

	Phone Number
Management	2700
Assistant's personal number	2804
Manager's personal number	2805

Table 4 – Phone numbers, Type D

This minimalistic solution relies on cheaper IP phones Linksys SPA942 with a monochromatic display (Fig 5). Configuration of lines is shown in Fig. 6.



Fig. 5 – Linksys SPA942 IP Phone

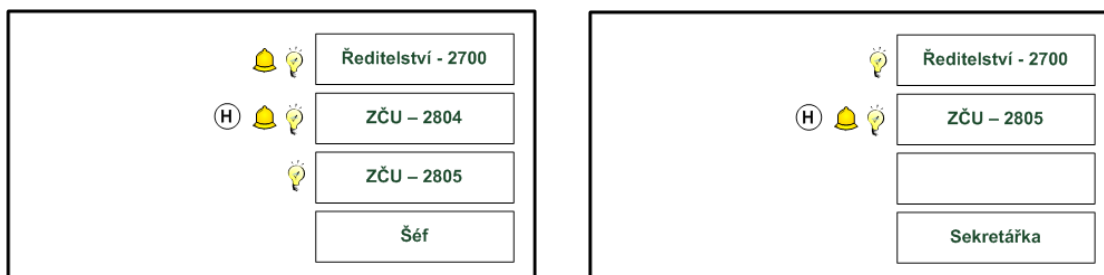


Fig. 6 – Lines in a Type D setup – assistant's phone on the left, manager's phone on the right

Calling and functions of the phones are similar to those in Type A setup. A separate Secretariat line cannot be established due to the limited number of lines that can be handled by the phones. This may be resolved by setting up an alias (by configuring the SIP exchange) for the assistant's personal line. As a result, incoming calls to the non-personal line will be indicated as calls coming to the assistant's personal line. Also, outgoing calls made by the assistant will be identified as originating from Management (2700) rather than Secretariat (2701).

Conclusion

As explained above, there are many ways to operate IP phones in a manager-assistant setup, depending on the number of managers and assistants, features of the system, and the choice of IP phones. The cheapest option comprising of two Linksys SPA942 IP phones lacks color display and the wide range of fast-call buttons (compared to the higher-end Linksys SPA962 phone with the SPA932 extension module) but offers all necessary functionality. More information including IP phone configuration can be found at <http://sip.cesnet.cz>.