A MANAGEMENT VIEW ON TELEPHONY

WHITEPAPER

by

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With the launch of the Internet and its WWW and Email, talking about telephony isn't exotic anymore.
On the one hand side we have a hype called E-business (mostly B2C and B2B), we see technology students being taught about the ins and outs of TCP/IP and HTML/XML and most start-up companies in the new economy are building software for use on the Internet.
On the other hand side we still see that 80% - 90% of B2C, B2B and especially C2C communication are done via telephone and the increasing use of mobile telephony enlarges also the amount of telephony users.

Because the telephony channel still is a very important communication medium, Crowne Associates published this white paper about the basics and use of telephony. This article is especially for managers with a lack of know-how on telephony, but who are forced to make decisions about investments or technical impact on telephony and related communication media.

Introduction

The possibilities of a customer or colleague to reach a company by telephone always start with the employees of the concerning company and the DISCIPLINE of those people to pick up the phone when it starts ringing.
It doesn't matter how advanced telephony (or computer) systems are at the moment, when you call someone (or less specific: when you call a company) you want someone to pick up the phone. You don't care if they are using high-performance Automatic Call Distribution (ACD)-switches, which are interconnected with the largest computer systems. You just want someone who can address the phone call and greet you with a smile in his or her voice.

Telephone calls

Within telephony every call can be divided in two different types of calls.
The person that makes the call creates an outgoing call.
The person that answers the call gets an incoming call.
There is a very important difference between those types of calls.
An outgoing call is a call that is planned and takes place whenever it suites you.
An incoming call is a call that can't be planned. Worse yet, most of the time an incoming call takes place when you don't want to be disturbed.
To solve this problem, service-desks, telephone operator desks or Call Centers are set-up with just one task: pick up the phone.

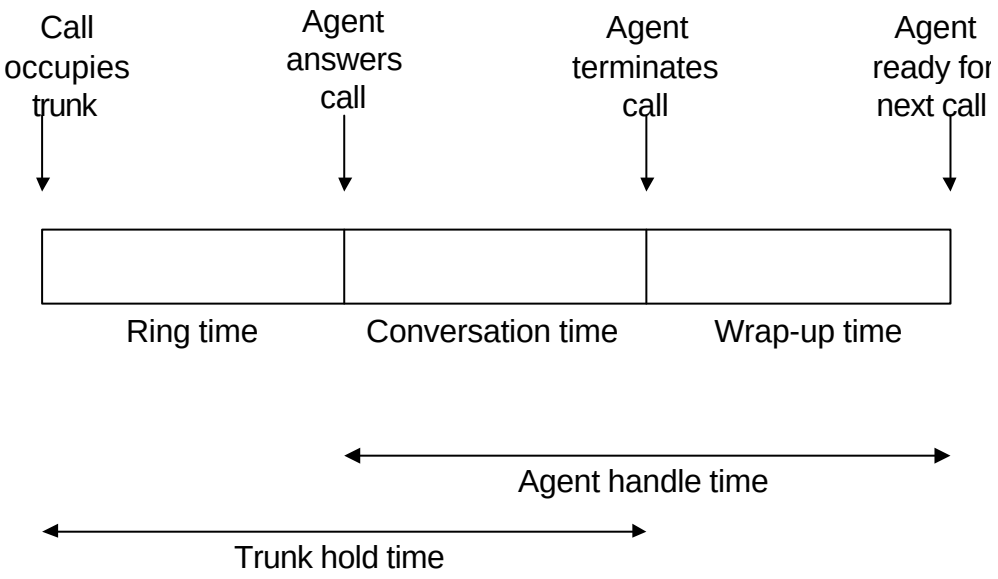
To manage incoming calls to a certain degree it is important to define the structure of such a call. To give a definition of an incoming telephone call we have to determine what happens when such a call is initiated. During a telephone call different phases can be defined, and last but not least is the timing of the end of a call.
The definition of a telephone call is important when management information is gathered about those calls.

Because of the use of new techniques like ACD and Queues, we define two types of calls:

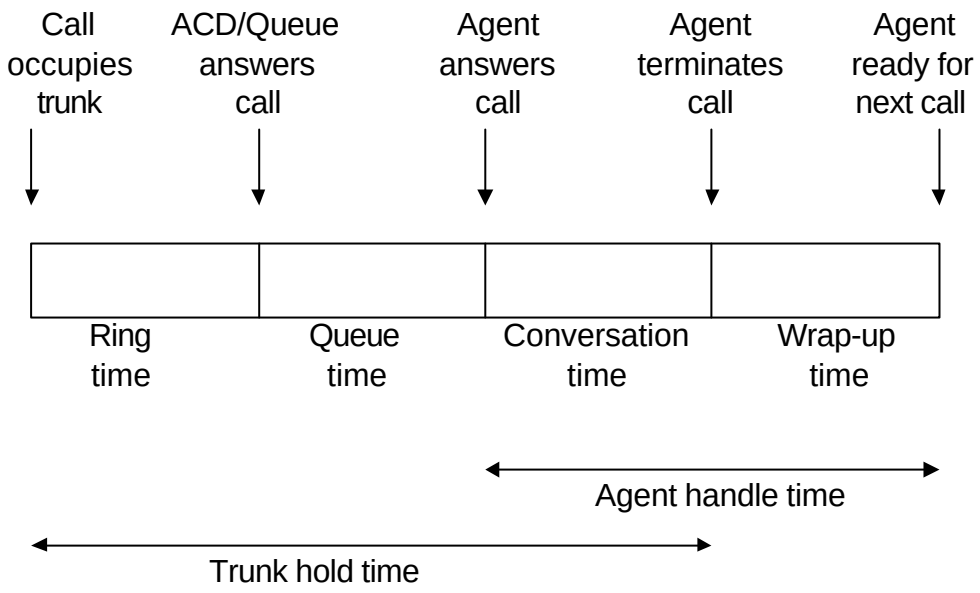
- A call that is not delayed
- A call that is delayed

For this definition we only look at personal call handling. When Interactive Voice Response (IVR: press 1 for..., press 2 for ...) etc. is used for computerized handling of calls, this definition of telephone calls needs to be adapted.

A call that is NOT delayed



A call that is delayed



Involved components

Making a telephone call involves the following components.

Lines

To absorb all those types of calls, Public Telephony Operators (PTO) also called Telco's offer several types of lines that can be used to set-up calls.
These lines are:
- incoming : lines that can only transport incoming calls
- outgoing : lines that can only transport outgoing calls
- both ways : lines that can be used for incoming as well as outgoing calls

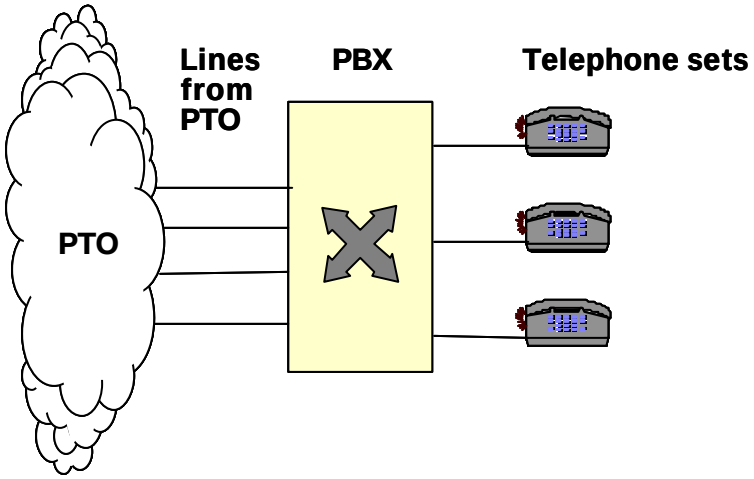
Every line has a number provided by the PTO.

Telephone set

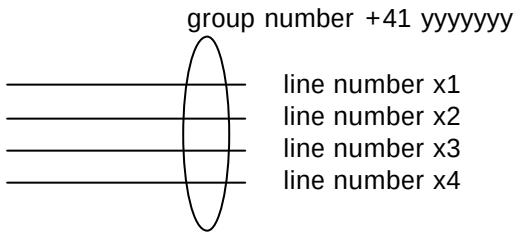
Almost every company or household these days has a telephone set to call other companies and households or receive calls. A telephone set has one line (with a number) to a PTO. As expected this line is a line for both ways telephony traffic.
If you make a call with your telephone set, you can't be reached because the line is busy with your call. On the other hand if you receive a call you can't call someone else even though you planned to. You have to pick up the phone first, finish this incoming call and then make your planned call.
If one telephone set is not enough because someone has to call a lot, or someone has a fax and wants to make calls during a fax-transmission, a second line with a second number can be rented from the PTO.
In this case when you receive a call but you planned to call someone else you can pick the second line and make the call. So renting another line from the PTO solves this problem.
But if you make a call and someone tries to reach you on that line (because you gave that person the number of that line) you still can't be reached.
To solve this problem you can give everybody all your telephone numbers or you can install a special switch that is able to connect different lines with different numbers and different telephone sets.
One possibility of installing such a switch is the use of ISDN. This is one physical line with a maximum of 8 different numbers and a special telephone set that is able to integrate these numbers.
Another possibility is the use of a PBX.

PBX

You can think of buying a Public Branch Exchange (PBX) as an interface between the lines of a PTO and your telephone sets.
A PBX is a technical switch that combines lines from a PTO on one site with a number of telephone sets on the other site.



Lets take a look at the side of the telephone sets.
All the telephone sets with different line numbers as stated in the example above, are becoming telephone sets with there own numbers because they are separated from the lines. So an internal numbering plan can be set-up.
To support the people working with the telephone sets most PBX's have a number of functionality's, like follow me (*21), call forwarding, group numbers etc.. All those functionality's are installed to achieve a better attainableness for the people working with the telephone sets.
On the line side the PBX also offers possibilities to achieve a better accessibility.
This is achieved by the possibility to connect incoming lines, outgoing lines and either ways lines or combinations. This creates the possibility to separate incoming from outgoing calls. If you make a call to someone, you can still be reached because you didn't use an incoming line.
Also with a PBX in combination with a PTO there is a possibility to combine several lines into a bundle of lines using the same number. This is a group number for lines. With this you can solve the problem of giving all your line numbers to customers.



ACD

Automatic Call Distribution (ACD) is a functionality used with PBX technology to create group numbers with a lot of supporting tools (wall-display, extensive management information, etc.) to process a lot of incoming calls for the same issue.
I would like to state that a PBX or ACD is just technical equipment to support the people working with the telephone sets. If, as stated in the introduction, there are no people to pick up the phone or people don't want (or are able to) pick up the phone, a PBX or ACD is of no use at all.

Staffing

If a PBX or ACD is used it is very important to optimize the amount of lines and telephone sets (telephone set = person!), because 70 % of the costs for a telephone call consists of personnel.
To do so it is important to know how many calls take place, what kind of calls take place and what time is involved with those calls. With this input it is possible to find out how many people need to be involved to manage those calls.
1. The amount of calls that take place is important to know for calcula ting the necessary amount of lines as well as telephone sets.
2. The type of calls (incoming or outgoing) is important to know because those calls can be divided. Outgoing calls can be planned during a period of time when there are not much incoming calls. Knowing this, the calculation for the amount of lines does not have to take place for all calls but just for the incoming calls (with a little overhead for peak-traffic). A second criterion for this calculation is whether most calls are addressed to specific numbers or not.
3. It is very important to know what the duration is of a call, for an incoming call as well as an outgoing call, for the calculation of the amount of lines as well as the amount of telephone sets. For optimization reasons it could be possible to redirect calls with a long duration.
There are tools available which calculate the number of lines and telephones (telephone set = people) with regard to the amount of calls.

The most important aspect of telephony is the amount of people available that are willing and able to pick up the phone.
Within real-time communication, you can calculate lines and telephone sets and buy beautiful equipment but the only thing a customer wants is a person that picks up the phone and assist them.

For more information on the use of telephony as communication channel please feel free to contact us:

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