



Alcatel **OmniVista 4760 R3.1**

Product description

Ref: 8AL020043128TCASA



PRELIMINARY

This document describes the main services provided by OmniVista 4760 **release 3.1**.

The main 3.1 new feature are indicated with "New" in the left margin, all the 3.1 new features are in **red** in the text.

Some equipment, components, or features (particularly earlier versions) may not be offered in every country (e.g., U.S. and Canada). For more information, contact your Alcatel representative.

Related documents available on the BPWS :

OmniVista 4760 release 3.1 Release presentation – 8AL020043120TCASA

OmniVista 4760 release 3.1 Product presentation – 8AL020043135TCASA

OmniVista 4760 release 3.1 Features list – 8AL020040009FLASA

OmniVista 4760 release 3.1 Installation guide – 3BH19261ENAA

OmniVista 4760 release 3.1 Administrator Manual – 3BH19260ENAA

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1. INTRODUCTION

Telecom managers need flexible network management tools to deal with the challenge of staying current with today's network and telecommunication advances. The network administration platform has evolved from a mere management tool to a powerful application suite that monitors employees' activity and even advises managers.

The OmniVista 4760 suite is **a set of applications** designed to help telecom managers and administrators in their day-to-day tasks and aid them make strategic choices in their converged networks, thanks to reliability, assured availability, performance information, access security, configuration management and telecommunication costs monitoring.

OmniVista 4760 belongs to the **OmniVista family**, the converged network management solution for Alcatel voice products based on the OmniPCX, and data networks based on OmniStack, OmniSwitch, Omni Switch/Router, and OmniCore products.

OmniVista 4760 provides a centralized management for **Alcatel OmniPCX family**:

- OmniPCX 4400 from release **3.0 to 5.0 Ux**,
- OmniPCX Enterprise from release **5.0 to 6.1**
- OmniPCX Office from release **1.0 to 4.0**
- Alcatel 4200 Office from R3.0 (only for Accounting).

New

This modular platform offers **a suite of management applications**:

- **Configuration** of a system or the global network,
- Multi-carrier consolidated **Call Accounting and Tracking**,
- **Performance and Voice over IP Performance** (1),
- **Topology and Alarms** management,
- LDAP Enterprise **Directory** (1),
- Scheduler,
- Maintenance,
- Security.

All the applications can be ordered and run separately, except:

- Scheduler, Maintenance and Security, that are always included in the application,
- Tracking, Voice over IP Performance and Topology, which are options for the Accounting, Performance and Alarms Applications.

OmniVista 4760's client/server scalable platform can handle a **networked or standalone OmniPCX**, with up to **20,000 subscribers and 400 nodes**. Beyond this limit, management solutions using specific architectures are proposed through PCS (Premium Customer Support, form available on the BP web site) process.

In addition, OmniVista 4760 from R2.1 allows the remote management of 1,000 OmniPCX, and up to 50,000 subscribers, with only the Configuration and Alarms applications.

This enhanced provisioning allows a better coverage of a Service Provider's installed base.

For more information on the product's limitations, see section 2.6, Provisioning level.

(1) Not available for OmniPCX Office/4200

Key points of OmniVista 4760:

- **Manage and control convergence** (1)

OmniVista 4760 from R2.1 provides monitoring of voice over IP communications, **for a better follow-up of the VoIP traffic and quality**, and **an easy integration of VoIP** in the customer's data network.

Its **long term** trend reporting capability aids in **anticipation of** infrastructure upgrade planning. OmniVista 4760 provides users with configuration and monitoring of their voice and voice over IP with **a combined applications suite**.

For **global enterprise management**, OmniVista 4760 offers the ability to integrate with platforms such as CA Unicenter TNG®, HP Open View® or IBM Tivoli®.

- **LDAP directory** (1)

OmniVista 4760 includes an **LDAP Directory**, based on **Sun® ONE Directory Server**. The Directory is **automatically synchronised** with the OmniPCX 4400/Enterprise network. In addition, any OmniPCX 4400/Enterprise user can **place a call** by simply clicking on the displayed phone number. Administrative information can be added, due to **import/export** from **other LDAP compliant directories**, such as Lotus Notes® or Microsoft Exchange®.

The Directory can be reached via any PC through the intranet via a browser, any workstation on the LAN/WAN via the Directory client, any standard LDAP client (such as MS Outlook Express®) .

In the same way, Alcatel Multimedia Attendant Console **4059** and **OmniTouch Unified Communication** applications such as My Phone (Web Softphone, 4980 Softphone), My Assistant, ... can access the Directory.

- **Integrated application suite**

Though they can be ordered separately, the OmniVista 4760 applications are tightly linked together to provide an **unified network management platform**.

For example, right-clicking on any item in the topology leads to the configuration or to the alarms of that item. In Configuration, clicking on the Accounting tab related to a subscriber leads to the CDRs of this subscriber. Clicking on the Directory tab leads to the entry linked to this subscriber.

- **Proactive tool**

As soon as a new information is generated, OmniVista 4760 sends an email, an alarm or launches an application to notify the right person, creating a **proactive management**.

For example, the instant an alarm occurs, the information can be sent via email to the network manager. In the same way, accounting and performance reports can be automatically generated in different formats (Excel, .pdf, html, text files) and sent via e-mail to selected people.

- **A distributed administration access**

OmniVista 4760 integrates an **embedded security agent** that configures user access rights. Each user accesses the applications according to his rights, from his workstation, through the company's LAN/WAN or through the company's intranet via a browser. Several applications can be accessed simultaneously.

(1) not available for OmniPCX Office/4200

2. STATE OF THE ART PLATFORM

2.1. ARCHITECTURE : DISTRIBUTED ADMINISTRATION

2.1.1. Client/ Server architecture

OmniVista 4760 is based on the Client/Server concept. Client and web client architectures are Java based. This allows the client application to be more independent from the operating system of the host platform. For example, the OmniVista 4760 clients work on any standard PC running under various Windows operating systems.

The use of CORBA (Common Object Request Broker Architecture) technology facilitates the communication between OmniVista 4760 Applications, their close integration and inter-operability and distribution.

OmniVista 4760 Server

OmniVista 4760 Server runs on **Windows® 2000** Professional or Server from SP4, **Windows® 2003** and **XP SP2**. The **Server** version is recommended for the management of more than 5,000 subscribers and mandatory for PPP (remote) connectivity.

For less than 250 subscribers and for accounting and configuration only, the OmniVista 4760 Server can share the resources of a **standard workstation**. In the other cases, the PC Server is **dedicated**.

OmniVista 4760 Client

OmniVista 4760 Client runs on a **non-dedicated PC**, on **Windows® 2000**, **Windows® XP SP2** and **Windows® 2003**.

The OmniVista 4760 Server and Client applications can run on the same PC ("embedded client"). Additional clients can be housed on external PCs and access the server via the company data network. For a better performance it is recommended to install the clients on a separate PC.

2.1.2. Web based management and Directory

The OmniVista 4760 Server may also be accessed through a **standard HTML browser** such as Microsoft Internet Explorer®, Netscape Navigator® or Mozilla®. Java® applets are downloaded on the PC client, and all the applications can be reached through the OmniVista 4760 Web server, **without any feature restriction**.

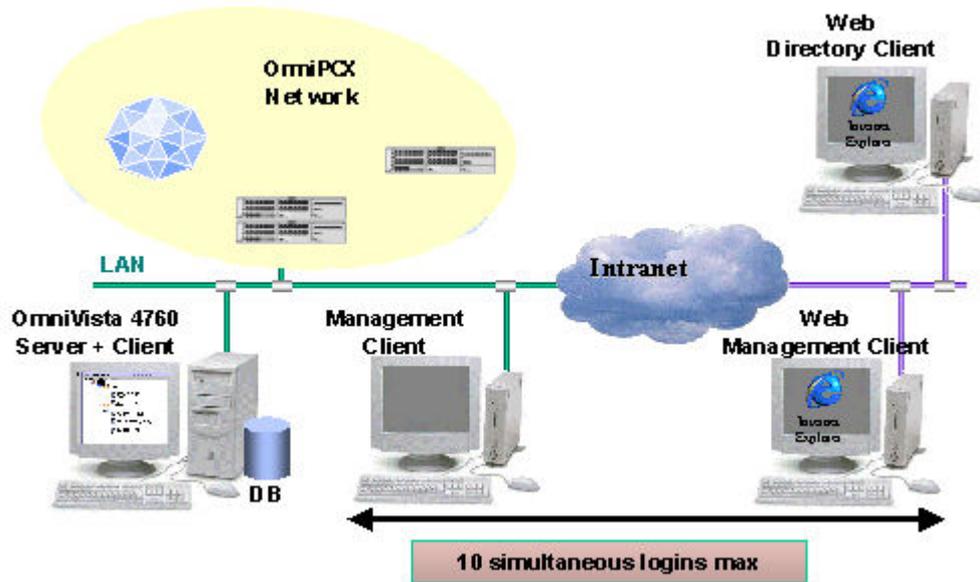
But there is an additional value-added application that can only be reached through the web : **the Directory consultation and update** (for more details, refer to the Directory chapter).

There can be **15 simultaneous logins to the OmniVista 4760 Administration**, via a client or a web client, and **1,000 simultaneous directory accesses** with HTML client, in non-connected mode (1).

The standard client allows a greater degree of flexibility by allowing users to easily obtain the tools and information they need, locally from any PC connected to the LAN or remotely through the company intranet or the public Internet or a VPN.

(1) beyond 50 simultaneous requests, the response time may increase beyond some seconds

Global architecture schema



2.1.3. Minimum hardware configuration

Model	Client	Server small capacity	Server medium capacity	Server high capacity	Server very high capacity
Capacity (subscribers)		< 250, 1 node; IP connection, Account/Config	250 - 5,000	5,000-20,000	From 20,000
Processor	766 MHz	1.4 GHz	2 GHz	Dual 2.4 GHz	Dual 3 GHz
Monitor	17" (19" recommended)				
Hard disk	3 GB	18 GB	18 GB	45 GB - 15 K rpm - RAID5 with 128 KB cache memory	72 GB - 15 K rpm - RAID5 with 128 KB cache memory
RAM	384 MB	512 MB	640 MB	1.5 GB	2 GB
Graphic board	VRAM: 4 MB supporting 1024x768 resolution, 16 M color				
Partition		NTFS to be able to install Netscape LDAP server			
Internet browsers	Netscape from version 7.0 Internet Explorer from version 6.0 Mozilla Firefox R1.0				
Disk/CD-ROM	Mandatory. DVD is recommended.				
Compatibility	Non dedicated server (1)		Dedicated server (2)		

New

(1) Combined use with other applications (such as Office applications, MS Word, Excel, etc.) on the same PC is possible, but the PC should not be a server for other applications, except FTP server.
 (2) Domain controller functions, Web server, etc. delivered with the OS must not be installed.

2.2. USER-FRIENDLY INTERFACE

The OmniVista 4760 has a **Windows® Graphical User Interface** which makes things easier for the network manager: network topology views, trees to navigate and select an item, multiple windows, contextual menus, online help, etc.

2.2.1. Multi- languages interface (1),

The OmniVista 4760 software is delivered as standard with **English, French, German, Portuguese, Spanish, Italian, Czech, Polish, Chinese, Slovakian, Korean, Hungarian and Russian** languages. Additional languages can be added.

Multilanguage is supported.

The language is selected when installing the server. Afterwards, any language can be chosen for the client application from the list above; for example, even if the Server is installed in Portuguese, when an English user opens a client, the user can choose the English language in the list. The next time the user logs in, the client will open in English.

Contextual online help is available for English, German, Portuguese, Spanish, Italian and French. **User guides** are available in English and in French.

2.2.2. Browser and Client common ergonomics : trees and grids

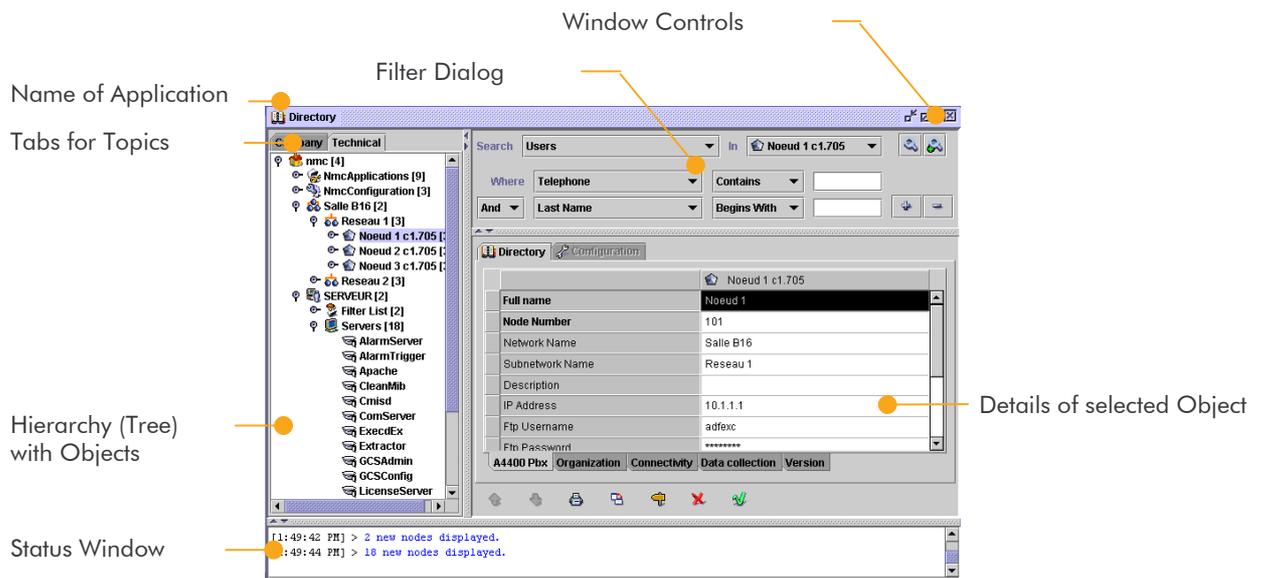
As the OmniVista 4760 application is available through a browser as well as a client interface, a **common ergonomics** for the different applications of administration such as Configuration, Topology, Accounting, and Alarms has been defined, in order to simplify the users' training.

In both interfaces, and for all the applications, there are two main parts in the main windows : the **tree** (left part of the window) and the **grid** (right part of the window). Because of the **tree** structure, the user can display different objects (e.g., sub-networks, nodes, subscribers, etc.) by contracting/expanding directories. In the tree, the user can select the objects to be viewed in the right grid.

The **grids** display the objects selected in the trees, depending on the application (for example, in Topology, a map appears instead of a grid).

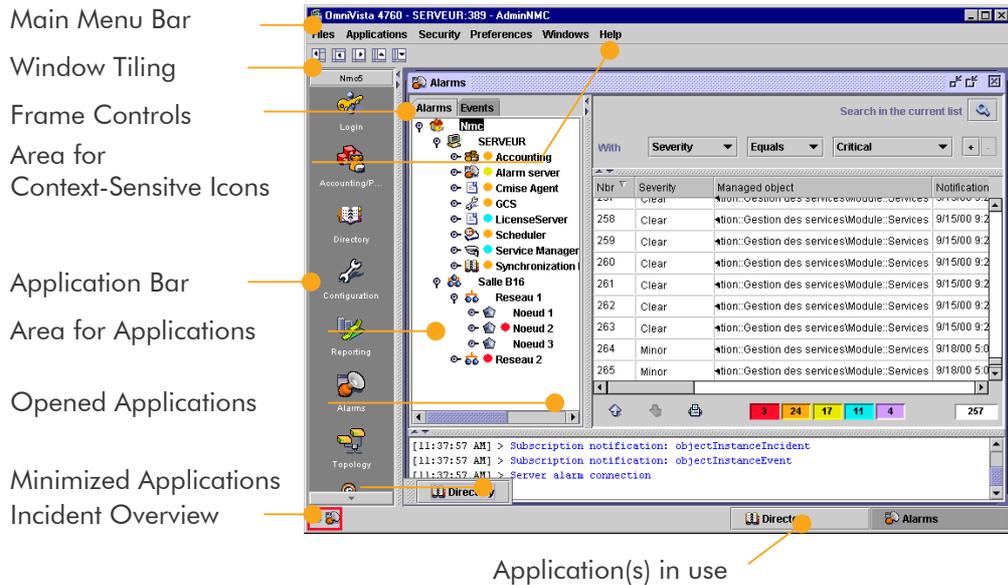
Using the filters above the grid, the users can initiate a **multi-criteria search** (e.g. a person in the directory, a board in a node, all the major alarms, etc.)

Example 1: Client general interface, Directory application

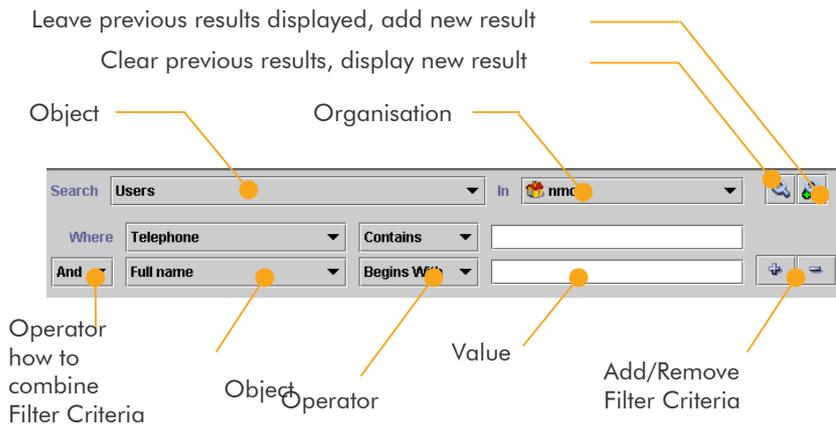


(1) Country test is needed to confirm full availability

Example 2: Client detailed interface, Alarms application:



Example 3: Filter dialog box (detail)



2.3. SECURITY MANAGEMENT

2.3.1. Generality

The main security features in OmniVista 4760:

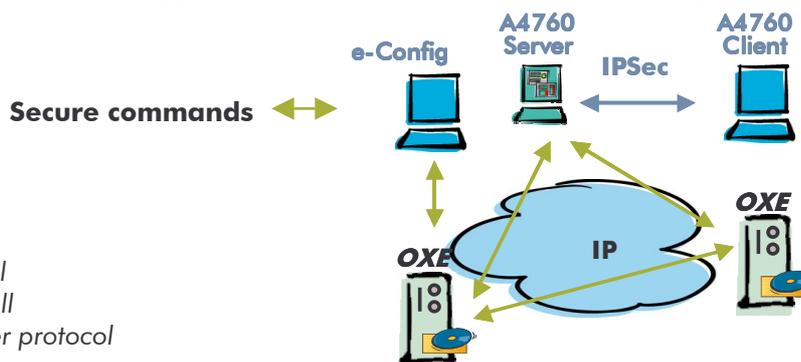
- **Automatic authentication and encryption:** secured protocols can be implemented between OmniVista 4760 from 3.0 and OmniPCX Enterprise from 6.0, and between OmniVista 4760 3.0 Server and Clients; from 4760 3.0; reduced range of ports can be configured to facilitate firewalls management,
- **OmniVista 4760 user identification and access levels:** the user identification is through a login and a password. There are access controls to the different applications with predefined and customized access levels, and additional access levels and domains for Configuration, Accounting and Directory,
- **OmniVista 4760 back up and disaster recovery process:** high-end customers may have very high requirements for reliability at system level and at application level. The focus is on a proposal for Disaster Recovery Process for OmniVista 4760 application,

2.3.2. Automatic authentication and encryption

- Secured protocols **SSH/SFTP** can be implemented between OmniVista 4760 Server **from R3.0** and OmniPCX Enterprise **from R6.0**. This is an OmniVista 4760 **option**.

In this case, **SSH** is used for secured **Telnet** (OmniPCX Enterprise configuration – technical interface) and **SSH/SFTP** for secured **file transfer**, for OmniVista 4760 Accounting and Performance for example. Mixed networks with secured/non secured OXE are possible, combining FTP/SFTP.

The security option provides the **encryption of file/data transfers and of the password** required during a connection.



Acronyms:

ftp: file transfer protocol

ssh: secured remote shell

sftp: secured file transfer protocol

- OmniVista 4760 supports **Windows® IP Sec** for the exchanges between the OmniVista 4760 server and client(s).
Windows® IPsec provides the **mutual authentication** of client(s) & server, the **exchange encryption**, and a mechanism for non-corruption of data.
IPsec is only supported between **OmniVista 4760 Server from version 6.0** with **Windows® 2003**, and on OmniVista 4760 **clients** with **Windows® 2003 and XP**.
Windows® IP Sec strategies for OmniVista 4760 client(s) and server are offered with the Security option.
- Reduction and configuration of the number of dynamic IP ports**
In a secured environment, firewalls or filtering routers must be managed or must be able to open dynamic IP ports used by the applications. Either the firewall creates the filters dynamically during the application's exchanges, or static filters must be managed and all the potential dynamic IP ports opened.

In the second configuration, **it is important to reduce the number of open IP ports of a firewall** when it is located between the OmniVista 4760 server and the OmniPCX Enterprises, and also between the OXE and IP devices.

With OmniPCX Enterprise R5.1, dynamic IP ports are chosen randomly between a range of values from 10,000 to 20,000. Therefore, a range of 10,000 IP ports has to be opened in the firewalls.

With OmniPCX Enterprise from R6.0, it is possible to reduce this range of ports. Default value: 500; range: from 10,000 to 10,499, minimum value: 128.

For the "incoming" IP ports of OmniVista 4760 Server, port numbers have been defined in the range 30,000 to 30,300 (instead of dynamic ports in the range 1,024 to 5,000).

2.3.3. Customized access levels

Customized access levels can be defined for each users:

The administrators who have access to the Security (see next chapter) can grant a different access level for each user. This access level can be different for each application, i.e., Mr. Doe has "read" access to the alarms, "modify" access to the reports and no access to the configuration.

2.3.4. Predefined access levels

In addition, to simplify an administrator's task, **predefined access levels** have been created according to standard profiles, and listed in the Directory:

15 predefined "user profiles" have been defined and are included within the product :

- 8 user profiles concern only the access to the directory (see this chapter),
- 7 user profiles define global access levels to the OmniVista 4760 applications :

- Administrators
- Network experts
- Network managers
- Accounting experts
- Accounting managers
- Directory experts
- Access to the masked information

The profile "Access to the masked information" allows the edition of additional information in the accounting reports (telephone numbers, real communication costs, PIN, etc.). For further details, refer to the Accounting section. The administrators have access to the masked information.

A user can have several profiles. In this case, access rights are added. For example, an accounting manager can also be a directory expert.

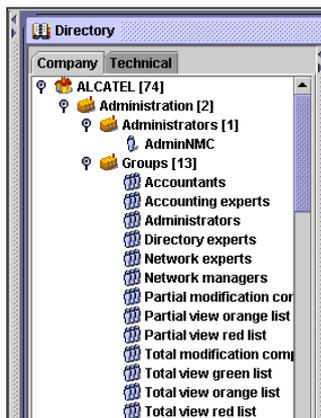
This is a summary of the access levels to the OmniVista 4760 applications depending on the user profiles:
The Security application allows the management of the access levels, login, passwords, etc.

Applications	Config.	Alarms	Topo.	PTP/Acc.	Report	Schedul.	Directory	Maint.	Security
User Profiles									
Administrator	All	All	All	All	All	All	All	All	Yes
Network expert	Manag. Level 0	Manag.	Manag.	Manag.	Manag.	Manag.	Manag.	4400 OXE	No
Network manager	Manag. Level 1	Clear	Read	No	No	Advance Modify	Read	4400 OXE	No
Accounting expert	No	Read	No	Manag.	Modify	Modify	No	No	No
Accounting manager	No	Read	No	Read	Read	Modify	No	No	No
Directory expert	No	Read	No	No	No	Modify	Read	No	No

There are also 8 predefined "user profiles" for the directory application (see this chapter for more details):

- Total modification company
- Partial modification company
- Total view red list
- Total view orange list
- Total view green list
- Partial view red list
- Partial view orange list
- Partial view green list

These 15 predefined access levels are defined as group entries in the company directory:



Granting a predefined access level to a new user is easy. From the directory application, the administrator adds this person as a new member of one of the predefined access groups. The administrator can add a person to several groups. In this case, this person benefits from combining the various rights.

Only members of the administrator group manage the security of the OmniVista 4760 Server. Consequently, the 15 predefined groups are in the "Administration" directory, which can only be viewed by the administrators.

Once an access level has been granted to a person by the administrator (for example, the accounting manager), this person must enter his name and password to login to OmniVista 4760 with his rights.

Only the administrators and the members of the group "Total modification company" can create or modify the users' passwords in the company directory.

2.3.5. Predefined accounts

In addition to the predefined access levels for specific people with a password, there are also predefined accounts within OmniVista 4760, which are not specifically granted to everyone but only to a specific type of user (e.g. attendants).

These predefined accounts allow OmniVista 4760 applications to start immediately, even if, for example, there is no user login and password configured in the directory.

There are 2 predefined accounts :

- **Adminnmc**: in the Administration directory. This is the default access to start the server for the installer. Only the Administrators can view this account. The password is created during the installation and has full administration access.
- **Alcatel 4059**: in the Management directory. This is the common account for the attendants using an Alcatel 4059 Multimedia Attendant Console, allowing them to have access to the OmniVista 4760 directory with no restrictions from their switchboard.

The Management directory can be viewed by anyone with access to the orange list (see Directory chapter), and can be managed by the members of the groups Total modification company, Network Expert and Directory Expert.

The combination of the customized and predefined access levels granted to the people in the directory provides **great flexibility and accuracy** in security management.

2.3.6. OmniVista 4760 back up and disaster recovery process

Back up features:

- **Automatic OmniVista 4760 database save:** CDRs, performance counters, carriers tariffs, reports, LDAP directories, etc. can be regularly and automatically saved on a directory viewable by the server
- **CDRs automatic archive:** see the section 7.5.2, CDRs archive restore in accounting for more details
- **Defense against database saturation :** there are warnings if disk usage exceeds specific thresholds. Two thresholds can be set up, when the disk usage exceeds the first threshold, a minor alarm is generated, and a major alarm is generated when the second threshold is reached. There are also automatic purges of data older than a given period, with filters, automatic defragmentation of the ASA/LDAP databases, etc.

Mechanisms that can be proposed for Disaster Recovery Process:

- **RAID5** to secure the OmniVista 4760 Database (CDRs, reports), onto Network Drive, for example
- **UPS** to secure the PC servers against power outage
- **A standby OmniVista 4760 PC server:** such a standby server can be synchronized overnight with the OmniPCX network and with the active 4760 server. Object models will be synchronized, allowing update of the network system directory, company directory, update of topology and accounting orgmap cost centers and subscribers. Alarms are sent in real time to both OmniVista 4760. Directory replication provides company directory updating in real time.

In case the active server crashes, the standby server can take over instantly, for all the applications. The users have to change the address on their browser or client.

Conditions: the IP address of each node is not automatically updated. If a CPU IP address is changed, the administrator has to update it in both OmniVista 4760 servers. Same thing for the customizations, except for the customized report definitions that can be regularly exported and imported, and for the directory that can be replicated.

This type of project should be escalated to the central team for analysis and for specific pricing on a case-by-case basis and a request for non-standard pricing.

2.4. OMNIVISTA 4760 SERVER/OMNIPCX CONNECTIVITY

Information collection can be done manually or automatically with a configurable frequency. If a link failure occurs, a **recall** procedure is automatically activated on a regular basis.

Communication may be set up **locally** (direct) or **remotely** through PSTN, ISDN, or ABC links. Depending on the OmniPCX, the connection can be set up through a modem, a V24 interface, or an Ethernet TCP/IP connection.

The protocol supported for remote connections is **PPP** (Point to Point Protocol). It is a non permanent connection. A minimum bandwidth of 64 kbps has to be provided between OmniVista 4760 Server and the OmniPCX for good performance. For remote connection, the OS of OmniVista 4760 Server is Windows 2000 or 2003 Server. An IP/V24 extension box is available if there are more than 20 remote nodes.

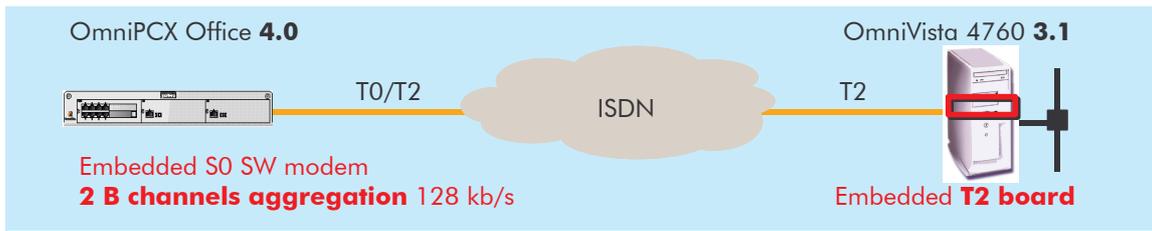
The management station can be remotely connected to an OmniPCX 4400/Enterprise equipped with a remote access device (**RMA**). This configuration allows **management** and **alarms centralization** through a temporary **secured connection**.

From OmniVista 4760 R3.1, **a faster and easier connectivity** is provided for the **remote management of large networks**, for OmniPCX Office remote configuration, back up and software download (not available for alarms sending):

- The new **T2 board** is embedded in the OmniVista 4760 server from release 3.1. This board provides 24 ISDN channels and 6 analog ports, with channel aggregation. It **replaces pools of modems** for remote configuration.

New

- From **OmniPCX Office R4.0**, the aggregation of two ISDN B channels is available, for a **128 kbps bandwidth**.



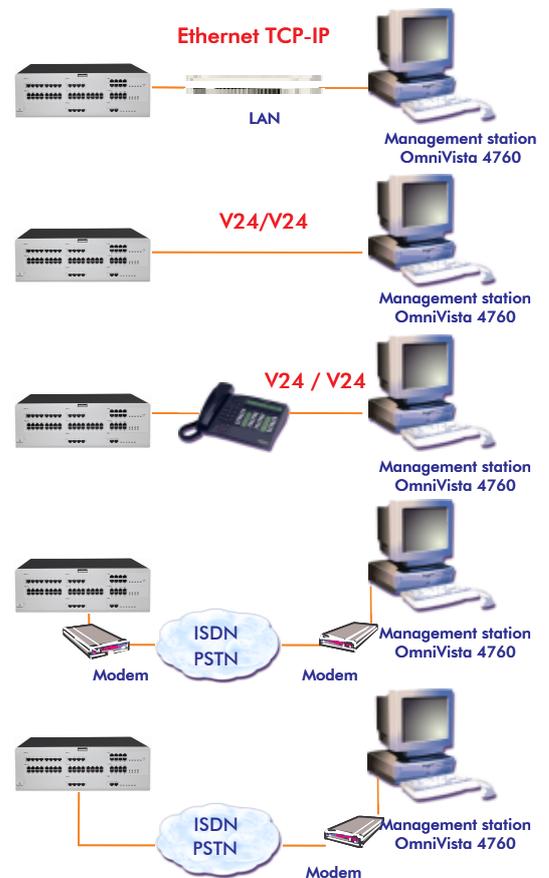
PCX connections:

On the OV 4760 side	OmniPCX 4400
Ethernet	Ethernet
Ethernet	Tunnel IP/X25
Analog modem (1)	Connecting box RMA interface
Terminal Adaptor V110 (1)	Connecting box RMA interface
Terminal Adaptor V120 (1)	IO2 board OBCA board

On the OV 4760 side	OmniPCX Enterprise
Ethernet	Ethernet
Analog modem	eRMA interface

On the OV 4760 side	OmniPCX Office
Ethernet	Ethernet
Analog modem (2)	Embedded software modem (V34)
ISDN modem (2)	Embedded software modem (3)

On the OV 4760 side	Alcatel 4200 (4)
Analog modem	Embedded analog modem



- (1) Available from OmniPCX 4400 4.2
- (2) OmniPCX Office remote available from OmniVista 4760 2.1
- (3) For urgent alarms and PM5 Call back , ISDN modem is available only from OmniPCX Office R2.1
- (4) Alcatel 4200 from R3.0, for accounting only.

2.5. OMNIVISTA 4760 SERVER/CLIENTS CONNECTIVITY

OmniVista 4760 Clients are connected to OmniVista 4760 Servers via **Ethernet** local (LAN) or remote (WAN). A minimum bandwidth of 128 kbps has to be provided.

For example, an administrator may access the network administration (using the 4760 client) or the directory (using a browser) from home, via intranet (i.e. through an analog connection between his PC, equipped with a modem, and an IP intranet gateway, on its company's side).

2.6. PROVISIONING LEVEL

The maximum number of OmniPCX 4400, Enterprise, Office or 4200 subscribers managed within the network is **20,000** for a **Full Pack** server : Configuration, Alarm, Accounting, Performance and Directory. Beyond this limit, management solutions using specific architectures are proposed through PCS (Premium Customer Support) process (form available on the BP web site).

OmniVista 4760 provides an enhanced provisioning (see table):

Applications	Number of subscribers managed
Full Pack	20,000
Configuration, Alarms/Topology and Performance (1)	30,000
Configuration and Alarms/Topology	50,000
Standalone Accounting	50,000
Standalone Directory	50,000

The maximum number of OmniPCX and Alcatel 4200 **nodes** managed is **400**, except for remote Configuration and Alarms when it can be extended to 1,000 – a PCS is required beyond 400 nodes.

The number of subscribers in the network is automatically checked when the OmniVista 4760 application starts, and periodically during the life of the product. If the number of subscribers exceeds the OmniVista 4760 capacity, alarms are generated, and it will no longer be possible to launch the 4760 clients.

All the subscribers of the OmniPCX network have to be included for OmniVista 4760 capacity, including virtual subscribers (except virtual subscribers with analog set type and an unjustified charging COS). For example, it is not possible to order OmniVista 4760 for 1,000 extensions, when the total number of extensions in the network is 1,500 : in this case, OmniVista 4760 will automatically count the number of extensions the first time it is connected, but will not start if there is not enough subscribers in the OmniVista 4760 license.

All the OmniVista 4760 applications have the same capacity: for example, it is not possible to order accounting for 100 extensions, and configuration for 200 extensions: the OmniVista 4760 platform would provide accounting and configuration for 200 extensions globally.

There can be **15 simultaneous logins** to the OmniVista 4760 Administration, via a client or a web client.

Directory : **200,000 entries** can be stored in the OmniVista 4760 Directory. There can be **1,000 simultaneous directory consultations** with HTML client, in disconnected mode.

Remark : the response time may increase significantly beyond 50 simultaneous accesses to the directory,.

Accounting : **20 million CDRs** can be stored in the OmniVista 4760 database. Beyond this limit, CDRs have to be archived. The accounting application can handle up to **200,000 CDRs a day**.

Configuration, Directory, Accounting/Performance : up to **10,000 lines** can be displayed in a grid.

(1) Without the Performance on DECT sets, VoIP, subscribers and called numbers

3. DIRECTORY

3.1. OVERVIEW

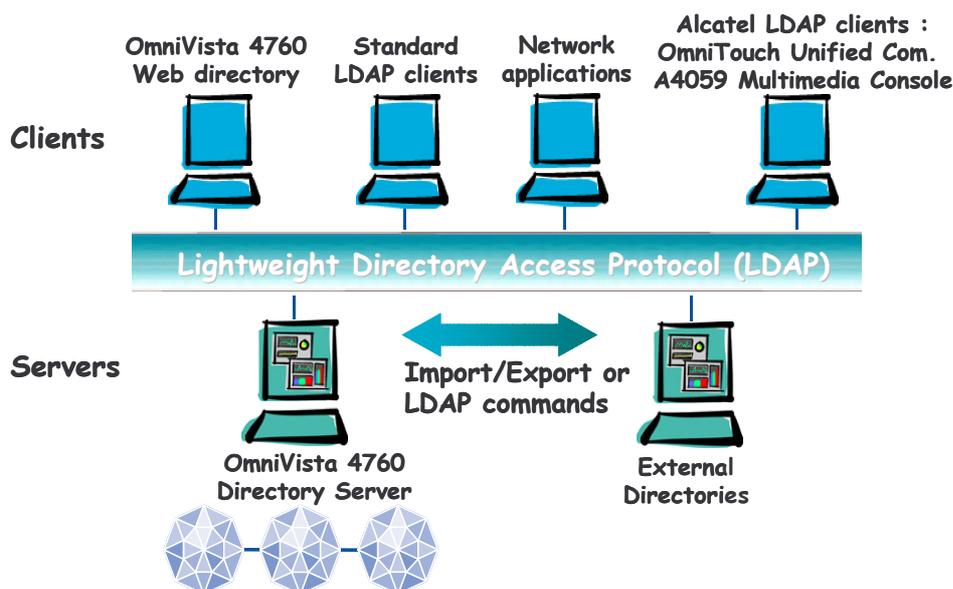
Because a company's success depends on its people, **a corporate directory is a key success factor for efficient internal communication**. The directory needs to be flexible and able to assist every employee with quick and relevant information on the desktop.

The directory application included in the Alcatel OmniVista 4760 is designed to address a converged infrastructure as well as **provide information on all desktops**. It works with the main enterprise directories as part of a **unified directory strategy based on the LDAP standard**.

OmniVista 4760 company directory feature is available for **OmniPCX 4400/Enterprise**.

The OmniVista 4760 Directory is based on **Sun® ONE** Directory Server (R5.2, former IDS, iPlanet Directory Server®), which is LDAP V3 compliant, and provides:

- **Import and Export** in LDIF (LDAP Directory Interchange File Format)
- Access through **Alcatel clients** such as Alcatel multimedia Attendant Console 4059 and OmniTouch Unified Communication applications : My Phone (Web Softphone, 4980 Softphone), My Assistant
- Access through **standard LDAP V3 clients**
- **Replication** with other Sun ONE Directory Servers
- Access by **LDAP commands**



There is **automatic database synchronization** between distributed **OmniPCX 4400/Enterprise servers** and the **OmniVista 4760 directory server**. For example, when there is an update of a cost center or a name in the company directory, it will automatically update the cost center and the name of the subscriber in the OmniPCX 4400/Enterprise database.

No need to update manually several directories means **reduced TCO**.

Any terminal with a Web browser is now able to access the directory information through a user-friendly interface.

In addition, any OmniPCX 4400/Enterprise **user can place a call by simply clicking on the displayed phone number** (see chapter 3.2.2, Click to call). Security management automatically checks the access rights of the user, through his login and password. A first level access is available without any login/password.

The OmniVista 4760 directory can contain up to 200,000 **entries**. These entries can be:

- Companies
- Countries
- Departments
- Localities
- Persons
- Rooms
- Groups

These entries are grouped in the company directory **organisation tree**.

To simplify the task of the Administrator, **each person's entry can be automatically created** and then updated, from the OmniPCX 4400/Enterprise subscribers information.

Each entry contains **fields** (for example 90 fields per person). The administrator selects among the fields which ones will be displayed in the user interface. The field names can be customized. These fields can be telephone information, updated in real time with OmniPCX 4400/Enterprise, as well as administrative information, such as geographical location, department, photo, and employee number.

Several internal phone numbers (8 or 9 series, DECT set , modem, etc.) and several external numbers (DDI number, mobile phone, fax, etc.) can be associated with the same entry. These numbers are **updated in real time** in OmniVista 4760 company directory.

The fields on the organisation (e.g., Company, Country, Department) can be **automatically filled in** with the information from the organization tree.

There are 2 ways to access the Directory :

New

- Web Directory: the users can access or update the company directory through their browsers. This interface provides the "**click to call**" feature. Internet Explorer® from R6.0, Netscape Communicator® from R7 and Mozilla® are supported.
- Directory administration: the administrators manage the directory (and other authorized applications) through the OmniVista 4760 Directory Administration, via the installed client or a browser, although the client is more accurate in this case. There can be 15 simultaneous logins to the administration.

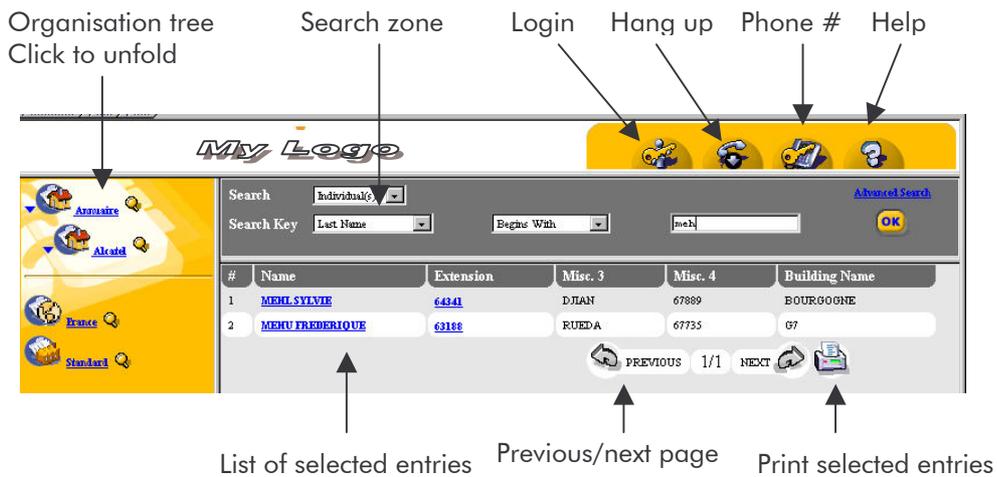
3.2. WEB DIRECTORY

The users can access and update (depending on their access rights, see section 3.4, Directory Security) the company directory via the **intranet**, through their browser.

Home page of the web interface (choose between Directory Access or Network Management) :

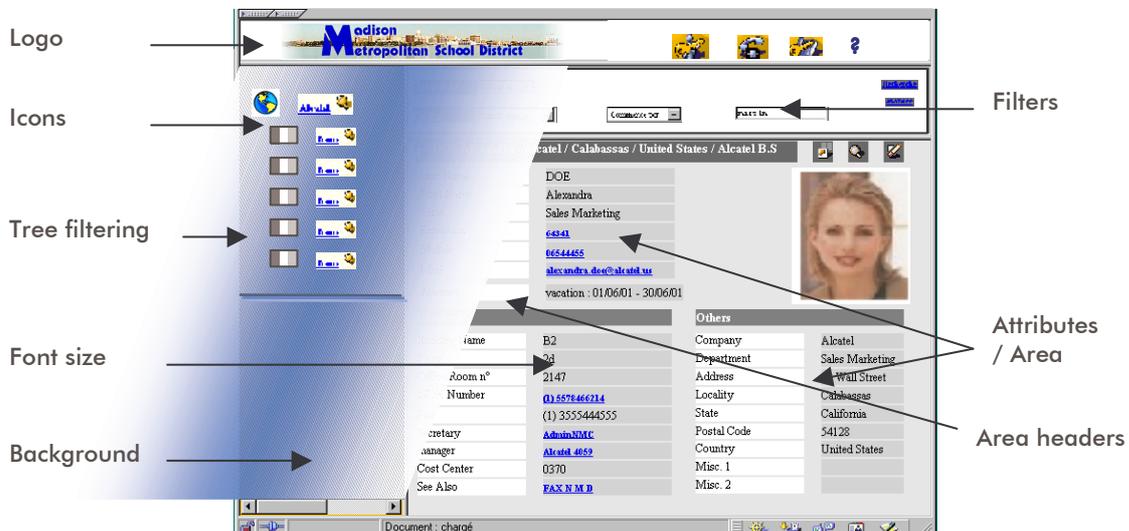


Directory access interface :



3.2.1. Web Directory customisation

The web pages of the OmniVista 4760 Directory can be **completely tailored for easy integration into the company's intranet** : the fields and the filters, the name of the fields, the title bar, buttons, icons, background image, number of lines in one page, maximum number of answers for a search, etc. can be customized (see image below).



3.2.2. Automatic dialling from the web Directory: "Click to Call"

A CTI (Computer Telephony Integration) feature is included in the OmniVista 4760 company directory. The "Click to Call" feature allows **clicking on a phone number (internal or external)** in an entry or in a list, **to automatically dial the number** on the associated phone set.

There is no need for a specific equipment or link, only an OmniVista 4760 directory and an OmniPCX 4400/Enterprise phone. Because of the "STAP" protocol embedded in OmniPCX 4400/Enterprise, OmniVista 4760 directory pilots the OmniPCX call handling, instructing which number to call.

Note: For analog and DECT phones, the user has to pick up manually. Click to call feature does not work with SIP phones, and with OmniPCX Office/4200, only OmniPCX 4400/Enterprise with IP connectivity. Click to call is available from the OmniVista 4760 web client and not in the directory administration.

3.2.3. Prefix management

The "Click to Call" feature automatically adds the carrier's prefix for an outgoing call. For a multi-national company, or for a heterogeneous numbering plan, the prefix management provides tables where all the prefixes related to the location of the caller/called persons are managed.

3.2.4. Linked fields

The OmniVista 4760 Directory is the total picture of the enterprise's organisation. **There are links between the entries** : clicking on the fields "Assistant" or "Manager" triggers the pop up of the assistant/manager's entry. An entry may also be linked to another one via the "see also" field.

When the assistant or the manager cannot answer, the caller may ask the attendant to be put through to someone in the same department. OmniVista 4760 from R2.1 provides two icons allowing **quick access to the list of people having the same assistant or manager** :



3.2.5. Print out of selected entries

You want to print the result of the selection you have made in the web directory?
 You want to regularly send a portion of the company directory to your department?
 From the web directory, by clicking on the icon "printer", **OmniVista 4760 prints out the selected entries in a spreadsheet.**

#	Name	Extension	Misc. 3	Misc. 4	Building Name
1	MEHANDIA Mme	01 46 52 93 14	FAGNONI		S2 JAURES
2	MEHEUST VERONIQUE				BREST
3	MEHL SYLVIE	64341	DJIAN	67889	BOURGOGNE
4	MEHU FREDERIQUE	63188	RUEDA	67735	G7

3.2.6. Multi-tenant Directory (1)

OmniVista 4760 multi-tenant Directory offers the consultation – and updating – of the directory of your own Company.

When accessing the directory via the web, each company or section of a company can see its own entries, because of a specific URL, which is associated to an organisation within a company. It is also possible for a company to see other companies directories, when connected to the directory root or a level above the companies (e.g., Countries).

The multi-tenant directory benefits from all the advanced features of the OmniVista 4760 company directory: automatic synchronization with the OmniPCX 4400/Enterprise network, update from the users, click to call etc.

The directory administrator manages the whole Directory on a single server. The organization tree of the directory is divided into different branches, which are companies. There is no limit in the number of branches, sub-branches and companies, within the set maximum number of entries.

Note: Multi-DDI numbering plans are not supported.

(1) PCS required for this feature

3.2.7. Personal address book

The Personal address book provides (from OmniVista 4760 R2.1) **management of personal entries** (persons: team members, customers, relatives, ...) to authenticated users. These entries cannot be seen by other users - the Administrator cannot see their content, only the list of people using address books.

The Personal address books benefit from all the advanced features of OmniVista 4760 company directory :

- click to call: to directly call a telephone number by clicking on it
- links with the other entries –“see also”, “Assistant”, “Manager”
- Ability to create a person, a group, a room,
- Etc.

The Personal address book is not an option; it is provided with the Directory license. There is no limit in the number of entries that can be created, but the entries in the Personal address books are included within the global limit of 200,000 entries.

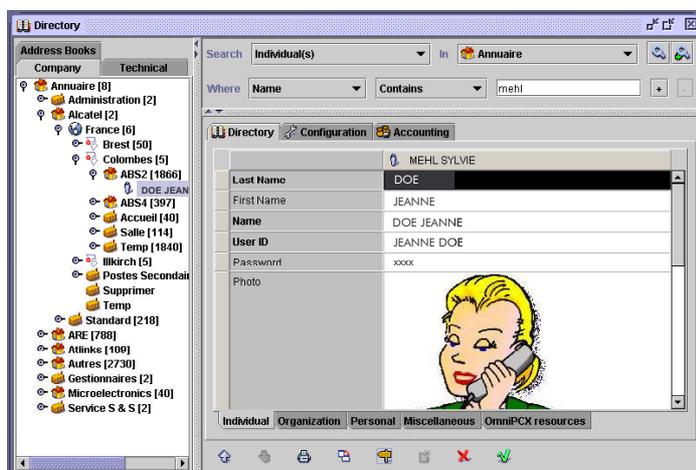
3.3. DIRECTORY ADMINISTRATION

This interface allows the user to easily manage the directory, through the client or the web client.

There are three folders in the OmniVista 4760 directory:

- The **company directory** reproduces the organisation of the Company (hierarchical, geographical, financial, ...), and contains the entries of the people and the groups, organized in the directory tree in companies, countries, departments, etc. Users access the Company Directory via a browser.
- The **system directory** reproduces the topology of the OmniPCX networks, and includes the networks, sub-networks, nodes, and within each node the content of each OmniPCX 4400 and Enterprise (ACT, media gateways, boards, trunk groups, telephone devices). It is a technical tool to manage the installed base. Its content can be exported in Idif for third party applications like asset management.
- The **address books** is the list of persons who use this feature (but the content of the address books is not displayed).

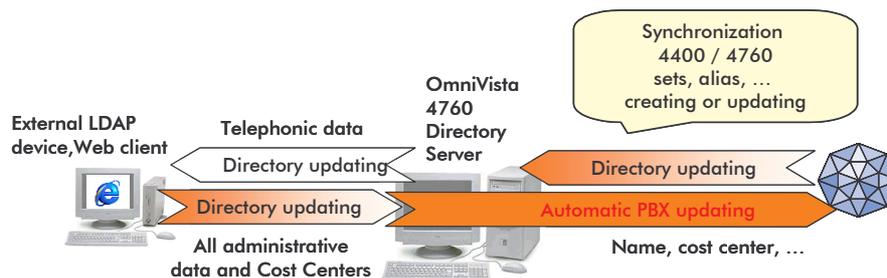
Directory interface:



The system directory is manually or automatically synchronized with each network OmniPCX. Thus, each object is automatically updated.

Links between the two directories allow an automatic or manual update of the company directory entries with the system directory objects and vice versa.

General overview of the synchronisation between the company directory and the OmniPCX 4400/Enterprise :



The **synchronized fields** in the company directory are the **telephone numbers** – internal phone number, ISDN number, the **cost center**, the **entity**, the **first and last names**.

The **automatic creation of people** in the company directory from the OmniPCX 4400/Enterprise subscribers and aliases can be enabled or disabled.

While managing the OmniVista 4760 directory, **direct access to the configuration, the alarms or the accounting of a subscriber** is possible for authenticated administrators.

The system directory provides a directory of the networks, subnetworks, nodes, subscribers, and information about OmniPCX 4400/Enterprise hardware, and OmniPCX software (version, IP address, etc.).

From OmniVista 4760 R3.1, **additional fields** have been added in the system directory to enrich it and store administrative information for third party applications like asset management:

- **Five miscellaneous fields** can be filled in by the directory administrator in the OmniPCX nodes and in the OmniPCX 4400/Enterprise racks, boards and phones. The name of these fields can be customized, for example "inventory number" or "contract number".
- **Customer data** (name, address, town, country) are automatically filled in from the OmniPCX 4400/Enterprise configuration, if they have been filled in, to view the localization of the nodes.
- **Localization fields** can be filled in by the directory administrator in the networks, subnetworks, nodes, OmniPCX 4400/Enterprise racks and phones, to know where this device is located.
- A **serial number** field has been added in the OmniPCX 4400/Enterprise boards and phones. It is automatically filled in for the 8 series.

3.3.1. Automatic update with external directories

The synchronisation between different directories lowers the TCO (Total Cost of Ownership) by avoiding duplicate entry of the data, double checks, and redundancies.

The OmniVista 4760 LDAP company directory simplifies the administrator's task thanks to its automatic synchronisation with telephone data from the OmniPCX 4400/Enterprise network, and to its automatic update of any part of the directory tree with other LDAP directories. Automatic import/export of LDIF (LDAP Directory Interchange File Format) files are used in this case.

There are many different types of directories within the enterprises, e-mail directories, Excel files, proprietary directories and relational databases. LDAP protocol is a standard, yet a lot of existing directories are not fully LDAP V3 compliant, or have to be updated. The LDAP V3 compliant directories with a different structure also have to be adapted : a **free mapping tool** is delivered with OmniVista 4760 to help our Business Partners carry out this synchronisation.

This mapping tool also provides Alcatel 4755 directory migration to the OmniVista 4760 directory, with the import of Alcatel 4755 telephone and administrative fields to the OmniVista 4760 company directory.

An **audit** of the directories to be synchronised is highly recommended to find out if this directory is LDAP V3 compliant, which fields will be exported to update OmniVista 4760 directory, and which fields of the OmniVista

4760 directory are of use in the existing directory. Also, are the names of the fields similar or not, is the organisation of the directories the same or not, etc.

Audit and mapping services for directory synchronisation are available in the **Alcatel Professional Services** catalogue.

3.4. DIRECTORY SECURITY

3.4.1. Confidentiality of the directory entries

There are 3 levels of confidentiality on directory entries :

- **Green** entries can be viewed by anyone with access to the directory (default value),
- **Orange** entries can be viewed by users with the access level orange,
- **Red** entries are the most confidential ones (e.g., entry of the company's CEO is a red entry which can only be viewed by authorized people).

Within the entry of a person, the **personal** fields can only be viewed or modified by users having the **total** view or modification right. The personal fields are :

- Home phone,
- Home postal address,
- Employee number.

For example, a user can only see your telephone number at home if he has the **total** view of your entry.

The administrator chooses which fields are displayed or not displayed in the web directory. He can also change the name of the fields according to the organisation of the company.

3.4.2. Directory application access rights

Predefined users profiles are created as group entries in the company directory.

Theses groups and persons are located in the directories Administration and Managers in the directory tree. Only the administrators can view the administration directory.

There are eight predefined user profiles (or groups) to access the company directory :

- Total modification company : (highest level) The user can create/modify/delete all the fields and all the entries in the company directory.
- Partial modification company : The user can modify the non-personal fields of all the entries.
- Total view red list : The user can access all the fields of all the entries.
- Total view orange list : The user can access all the fields of the orange and green entries.
- Total view green list : The user can access all the fields of the green entries.
- Partial view red list : The user can access the non-confidential fields of all the entries.
- Partial view orange list : The user can access the non-confidential fields of the orange and green entries.
- Partial view green list : The user can access the non-confidential fields of the green list.

In addition, there are:

- The **anonymous access**, by default, no need to be logged, which is the same as the partial view of the green list, without two fields that are masked: car license and cost center name.
- The **personal access**, which allows the same things as anonymous, plus the view and modification of all the fields of one's own entry, except the fields Employee number, and cost center name which cannot be modified.

An user can belong to several groups, adding rights.

In addition, there is also one predefined account concerning the directory application in the Management directory, **Alcatel 4059**, which is the common account for the attendants using an Alcatel 4059 Multimedia Attendant Console with the rights Total modification company.

4. CONFIGURATION APPLICATION

The configuration module provides **centralized management** of the Alcatel OmniPCX 4400/Enterprise/Office. It has been designed to be flexible, user-friendly, and easily integrated into a legacy environment. The OmniVista 4760 configuration provides local or remote management of a single OmniPCX or a network (i.e., multiple nodes of OmniPCX 4400/Enterprise).

The network manager can quickly and easily edit, create or delete any network object in the managed network. A configuration tree and a configuration grid allow the network managers to quickly view, navigate, and select one or several instances. A search function helps the network manager to locate any object or field.

In the configuration tree, there are **nodes** (OmniPCX 4400, or Enterprise, or Office, or 4200 or pseudo PCX), **sub-networks** (groups of nodes), and **networks** (groups of sub-networks).

While using the configuration application, the network manager can consult and modify the data associated in the alarms and directory applications by clicking on the corresponding tab.

4.1. OMNIPCX 4400 AND ENTERPRISE CONFIGURATION

4.1.1. Configuration Application principles (object model)

The configuration data in the **OmniPCX 4400/Enterprise** is organized according to an **object-based model**. Regardless of which OmniPCX 4400/Enterprise release is used, **the management application will automatically adapt its interface to the managed platform**. The managed OmniPCX 4400/Enterprise is configured **online** to ensure consistency and relevance of the data. It allows any combination of central and local management while accessing a **continuously updated database**. The same ergonomic is used, whatever the object or data to be managed.

The application can configure **several OmniPCX 4400/Enterprise in a single session**(1). The "**scoping**" feature allows to filter and update the same object in the whole Alcatel OmniPCX 4400/Enterprise network (1). For example, you can create an emergency call number on the top-right programmable key of all the telephones of the network at once.

The OmniPCX 4400/Enterprise configuration application is online configuration. This means that for configuration operations, the OmniVista 4760 is connected to the related OmniPCX 4400/Enterprise. **Configuration commands can be scheduled through import/export**. This allows the advance preparation of commands to be applied later to the network. It also makes it possible to import or export data directly from any application using a standard text file format.

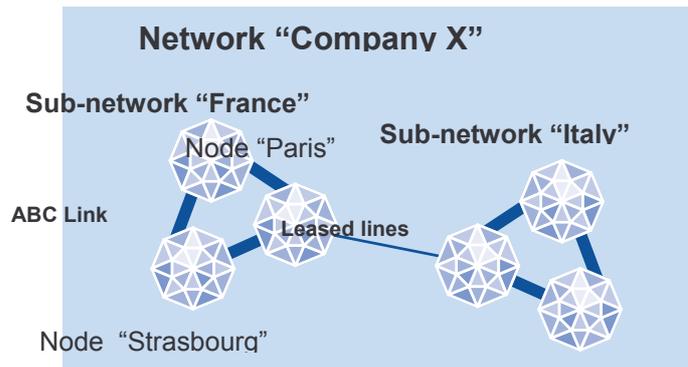
4.1.2. Glossary of the Managed objects ...

For OmniPCX 4400/Enterprise nodes:

A **sub-network** is a group of nodes (each node has a different number) related by links. The numbering plan is homogeneous in a sub-network, meaning that the phone number of each set is unique,

A **network** is a group of sub-networks, linked by trunk groups. The numbering plan can be heterogeneous, meaning that the phone number of a set can be different depending on the calling OmniPCX 4400/Enterprise.

(1) OmniPCX 4400/Enterprise with same release



An **instance** is one item inside the OmniPCX: a set, an abbreviated/speed dialling number: phone number 65444 for example.

An **attribute** is a parameter related to an instance that can have different **values**. For example, the attribute Cost Center ID of the instance phone 65444 has the value 255.

An **object** (or a **class**) includes all the instances of this type: Subscribers, abbreviated/speed dialling numbering, etc.

4.1.3. Configuration by domain

Large companies with several network managers, multi-company, or organizations with a security/confidentiality policy use configuration by domains. This feature provides specific access rights on a domain to each manager. On each Domain, a specific manager can have for each object, instance or attribute :

- No access
- Read only
- Read/Modify
- Read/Modify/Create/Delete

Administrators and service providers have the highest access rights and manage the security (access rights). Up to 32 domains can be created within a sub-network.

A domain related to an OmniPCX 4400/Enterprise homogeneous sub-network consists of a set of:

- Subscribers and/or data terminals
- Hunt groups (the sets of a hunt group must belong to the same domain)
- Phonebook entries.

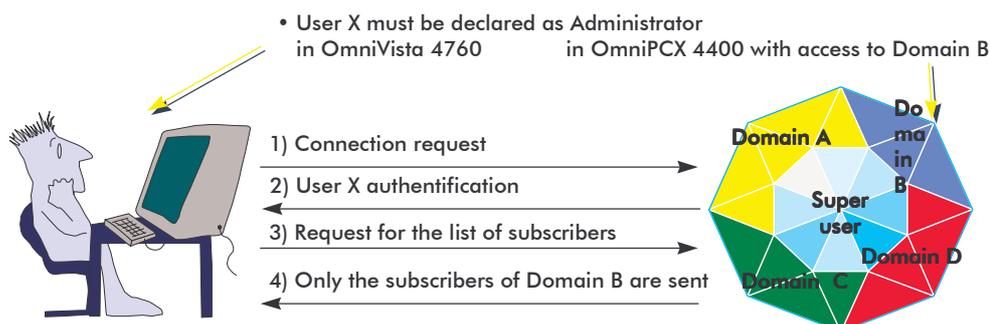
These domains are only related to configuration, and have no link with the other OmniVista 4760 applications.

A domain is a homogeneous set of subscribers, for example:

- Manager/assistant must belong to the same domain
- Supervising and supervised sets must belong to the same domain

How does it work?

Example: User X, managing the Domain B, consults the list of subscribers



Note: The configuration by domain is linked to the OmniPCX 4400/Enterprise security software license.

4.1.4. Single operations

The single operations available on manageable objects are:

- Create (with default value defined in the OmniPCX 4400/Enterprise)
 - Create from (with the same value as another instance)
 - Modify
 - Delete
 - Action (for some instances, launches an action by the OmniPCX 4400/Enterprise, for example “move”)
- For each attribute, online help is displayed dynamically.

4.1.5. Graphical display of DECT, Reflexe and Alcatel 8 and 9 series

When configuring a subscriber set, from the single configuration window, it is possible to configure the keys directly from a graphical view of the set:

New A graphical view is available for each type of DECT, Reflexe and **Alcatel 8 and 9 series**.



4.1.6. Multiple operations

By selecting one object in the main window and using multiple filtering criteria, it is possible to access and modify one, several or all instances in the OmniPCX 4400/Enterprise.

For instance, by using the attributes “Cost Center ID” and “Set Type” of the object “Subscribers” as filtering criteria, one can list all subscribers belonging to the Cost Center 268 and equipped with a 4034 Reflex set . In this case, the result can be displayed in a table format.

From this window, the OmniPCX 4400/Enterprise manager can create, duplicate, modify or delete one or more subscriber sets. The manager can also give in one command, for example, the same restriction COS to all the subscribers of a specific cost center.

Note: In this mode, only a subset of the attributes of a specific object can be displayed. This allows for objects with many attributes (such as subscriber sets) to display only the attributes needed.

The width of each column can be adjusted by a simple mouse click.

Directory	Directory name	Directory First Name	Locatio	Shelf	Board	Equip	Set Type	En	Language	Associate	Cost Cent
64220	EX	MARNAC	2	255	255	255	4034	20	1	64220	268
64344	BRAMIERI	ROBERT	2	2	17	1	4034	20	1	64344	268
64651	TAILLEPIED	BRUNO	2	1	17	1	4034	20	1	64651	268
64670	PONVERT	ERNEST	2	1	21	9	4034	20	1	67752	268
66073	VEILLARD	LOIC	2	1	22	5	4034	20	1	66073	268
66091	BAILLOU	MICHEL	2	1	18	15	4034	20	1	66091	268

Filtering criteria can be set on each attribute. When they are activated, the application displays a list in table format.

Available filters are:

- Equal to, different from
- <= , >=
- Beginning with, ending with
- Wildcards for one character or one string
- Interval range

4.1.7. Import/Export mechanisms

4.1.7.1. General Principles

Whether single or multiple operation modes are used, the result can be (manually) exported to a standard ASCII file and reused with standard Windows applications (such as Excel).

This allows, for example:

- Exporting OmniPCX 4400/Enterprise data to a company database,
- Producing a system directory,
- Defining user profiles that can be reused.

Node	Directory N°	Dir. name	Dir. First Name	Shelf Address	Board Address	Set Type
Mozart	65791	LAVIGNE	JEAN	1	11	4034
Mozart	65796	BRUNET	GEORGES	0	23	4034
Mozart	65808	DUBAIN	INES	0	24	4035T
Mozart	65810	FALTE	ARTHUR	1	11	4035T
Mozart	65812	BENKOUN	MOHAMMED	1	9	4034
Mozart	65813	ELHAGI	JAUDAT	0	9	4035T
Mozart	65815	PICART	GUSTAVE	0	23	4034
Mozart	65820	RACHET	VIVIANNE	0	4	ANALOG
Mozart	65832	GERARD	ROBERT	255	255	4037 (4035 &
Mozart	65834	CARRE	CAROLE	255	255	4035T
Mozart	65852	LAVILLE	DOMINIQUE	1	9	4034
Mozart	65861	LEMEUNIER	SERGE	0	10	4035T
Mozart	65863	FRANCOIS	RAYMONDE	255	255	4037 (4035 &
Mozart	65871	VIERKEIN	REMI	255	255	4037 (4035 &

A standard ASCII file containing configuration data can be imported into the OmniVista 4760 application, for an update of the OmniPCX 4400/Enterprise. This allows the offline preparation of a batch of changes, without being connected to the OmniPCX 4400/Enterprise.

4.1.7.2. Import/Export of several objects

Several objects of the same family can be exported to the same file. For example, a subscriber profile can be defined that includes the subscriber set configuration, the keyboard and the directory.

Import

When an imported file is applied to the OmniPCX 4400/Enterprise for configuration changes, the following rules are used:

- If the data already exists in the OmniPCX 4400/Enterprise, it is a change,
- If the data doesn't exist, it is a creation,
- You cannot delete the data using import.

It is also possible to clearly specify in the imported file, for each item, which operation must be done (e.g., create, modify, create or modify, delete).

Export

Export has the same rules as import.

Import/export allow the administrator to prepare in advance a set of changes, save the changes to a file without applying it to the OmniPCX 4400/Enterprise, and re-import the file at the right time for OmniPCX 4400/Enterprise changes.

4.1.8. Operations logging: events

All configuration operations successfully applied to the OmniPCX 4400/Enterprise are logged into the event list, giving the date and the list of operations. See next chapter for more details.

4.2. OMNIPCX OFFICE CONFIGURATION

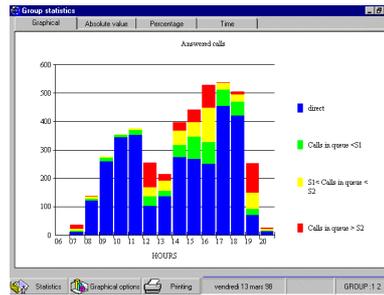
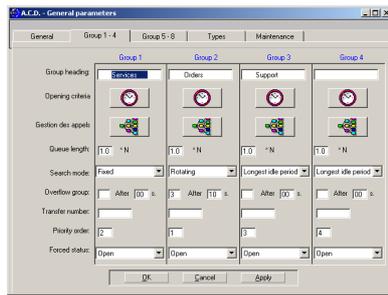
The **OmniPCX Office voice and Internet Access configuration** is made available by integrating OmniPCX Office specific configuration tools (PM5 and Internet Access Web based configuration) into the Alcatel OmniVista 4760 platform. The OmniPCX Office configuration can be performed through the Configuration application, or from the Topology.

Three new features are available in PM5 from OmniPCX Office R3.0 and OmniVista 4760 R2.1.15 :

- **PM5 off line** : the PM5 application can be started on line or off line in the Configuration application. The administrator in "off line" mode can configure an OmniPCX Office without being connected to it. Modifications are saved in a directory on the OmniVista 4760 server. The off line mode lowers the costs for remote configuration, as the administrator can prepare his modifications offline and send them at once online.
- **Manual and automatic save/restore of an OmniPCX Office** : In case of a major upgrade, or in case of problem with the OmniPCX Office, it provides the back up of the configuration, and its restoration with the latest back up version. The scheduled save of a set of OmniPCX Office is also available (for example, for a Remote Service Center).
- **Manual and scheduled software download** (swap) allows the upgrade of the OmniPCX versions. For improved performance, only the differences between the current and the future version are sent. A save can be made before the swap; a reboot is made after. This service is not available for upgrading to a major version. The scheduled upgrade of a set of OmniPCX Office is also available (for example, for a Remote Service Center).

New

From OmniPCX Office 4.0 and OmniVista 4760 3.1, OmniTouch Call Center Office management and Statistic manager can be launched locally or remotely through OmniVista 4760 configuration, to **centralize the administration and the edition of statistics on ACD agents, ACD groups, waiting queues, etc.**



For more details about PM5 and Internet Access web based configuration, see the OmniPCX Office product description.

4.3. SECURITY MANAGEMENT

Each OmniVista 4760 user is assigned an access level for the configuration (see Security chapter), determining which data and nodes the user has the management rights to.

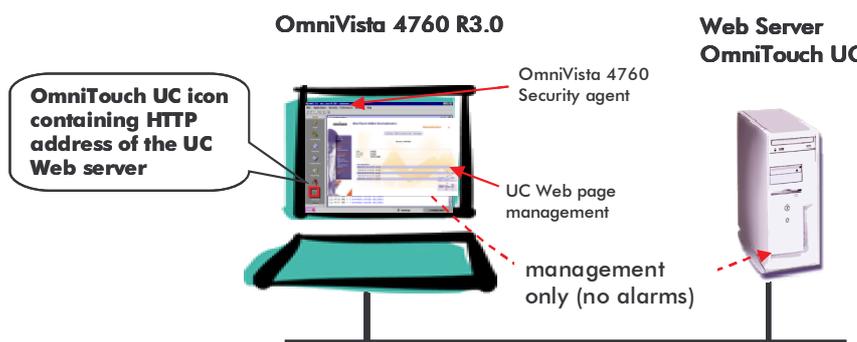
Three predefined access levels are available for the OmniVista 4760 configuration application: No access, Normal, All.

In addition to these predefined levels, it is possible to create/modify new levels (up to ten) in the OmniPCX 4400/Enterprise and to limit the access for one OmniPCX 4400/Enterprise down to its attributes. This access level customization is explained in the section: Configuration by domain.

4.4. LAUNCHING EXTERNAL APPLICATIONS

From OmniVista 4760 R3.0, it is possible to **launch external applications** (exe file or browser), in a separate window. Access to these applications is controlled by the OmniVista 4760 security agent.

For example, it is possible to launch OmniTouch Unified Communication web management from the OmniVista 4760 icon toolbar.



5. NETWORK MAINTENANCE

Whatever the OmniVista 4760 license, the Maintenance application can be used. It provides the **scheduling** of the **OmniPCX databases back up** regardless of the connectivity. The restoration is manual. For OmniPCX Office, the back up can be made manually or automatically through PM5.

6. ALARMS APPLICATION

The Alarms application **centralizes the alarms and events** coming from an Alcatel OmniPCX 4400/Enterprise/Office network, as well as the internal faults detected on the OmniVista 4760 server.

The alarms may come from a communication, an environment, an equipment problem, or a processing failure, or a problem in the quality of service. The events can be the creation, the suppression, the modification of an object such as a subscriber or an extension, a change in the value of an attribute, a security breach.

These alarms and events are **displayed in real time** according to filters and are processed by the alarms application according to the needs of the telecom manager. The alarms are displayed following the ISO model, using **specific colours according to the severity level**.

By default 1,000 alarms and events are displayed, and the 5,000 last alarms and events are stored in the OmniVista 4760 database. Filters and details allow the network manager to look for specific items in the list. The manager may decide to **delete** an alarm, **clear** it or **acknowledge** it.

Alarms and events lists and details can be printed, in order for the network manager to archive historical data. Statistics on alarms are also available in the report application.

When an alarm occurs, a sound can be played, **an automated email can be sent**, or **a script can be processed**. This helps the telecom manager to react before users complain.

By right-clicking on the alarm or the event, the user **directly launches the configuration** of the managed object.

The combination of the OmniVista 4760 topology and the alarm application empowers the network manager to **reduce troubleshooting time and be more proactive**.

6.1. ALARMS AND EVENTS TREES

The network manager can view all the alarms and events stored by the server, or only a part of them. There is one alarm tree and one event tree. The network manager can shift from the alarms to event tree by clicking on the appropriate tab. These trees are dynamically updated.

6.1.1. Alarm tree

Alarm tree enable the network managers to select the alarms from the network, a sub-network, a specified node, a link between 2 nodes, a shelf inside the OmniPCX 4400/Enterprise, or more precisely, a board or a terminal: it is an intuitive way to find out quickly what's going wrong.

The internal alarms sent by OmniVista 4760 applications are also displayed in the alarms tree with the ability to select the alarms of an application or a module. Next to each item of the tree, a coloured dot shows the maximum severity of the alarms linked to this item.

6.1.2. Event tree

The events tree is built the same way, but the selectable objects are any object in the network, sub-network and OmniPCX such as subscribers, phonebook, abbreviated/speed dialling numbers, phone services, data services, numbering plan.

6.2. ALARMS AND EVENTS LISTS

Alarms and events lists corresponding to the item selected in the tree are displayed on the right of the screen. By default, all the alarms and events are shown.

By clicking on the icon "Detail", the **details** for a specific alarm or event selected in the list is displayed, providing more information and an initial diagnosis (for the alarms).

6.2.1. Alarms list

Each alarm is displayed in an alarm window and described according to the standard OSI format. The network manager can acknowledge, clear or delete a selected alarm, or ask for details.

The description of each alarm contains:

- An identification number
- The severity level (6 levels)
- The managed object
- The notification time
- Additional information
- The event type
- The probable cause

In addition, the **detail** of an alarm displays:

- The reception time of the alarm
- A notification ID.
- Information, which is a fault diagnosis identifier
- Fault diagnosis

Alarms list example :

Nbr	Severity	Managed object	Notification time	Additional text
510	Indeterminate	seau::jaures/walmyfillkirch/brestNoeud::b2sil40	3/24/00 1:12:41 PM	Erreur IPC Chorus : appli CMISE
511	Indeterminate	seau::jaures/walmyfillkirch/brestNoeud::b2sil40	3/24/00 1:12:41 PM	Erreur IPC Chorus : appli CMISE
512	Indeterminate	seau::jaures/walmyfillkirch/brestNoeud::b2sil40	3/24/00 1:12:41 PM	Erreur IPC Chorus : appli CMISE
516	Indeterminate	seau::jaures/walmyfillkirch/brestNoeud::b2sil40	3/24/00 1:13:12 PM	Erreur IPC Chorus : appli CMISE
527	Critical	seau::jaures/walmyfillkirch/brestNoeud::b2sil40	3/24/00 1:59:28 PM	La commande shutdown a ete a
528	Major	stNoeud::b2sil40Alvéole::0\Carte-Interface::20	3/24/00 1:59:30 PM	Perte de la CPU secours
529	Major	stNoeud::b2sil40Alvéole::0\Carte-Interface::21	3/24/00 2:00:13 PM	Perte d'un coupleur de type IO2
540	Indeterminate	seau::jaures/walmyfillkirch/brestNoeud::b2sil40	3/24/00 2:42:59 PM	Erreur IPC Chorus : appli CMISE
541	Indeterminate	seau::jaures/walmyfillkirch/brestNoeud::b2sil40	3/24/00 2:42:59 PM	Erreur IPC Chorus : appli CMISE

In the alarm window, a color is attributed to each alarm according to the severity.

Six severity levels are possible:

- Critical
- Major
- Minor
- Warning
- Indeterminate
- Clear (related to a former alarm that has been corrected)



The total number of alarms /level is indicated at the bottom of the list, for the item selected in the tree.

The maximum number of alarms stored is configurable by the manager. (Default = 1,000 alarms). The oldest alarms are automatically overwritten.

6.2.2. Events list

The events list has the same ergonomics as the alarms list, but it contains fewer items:

- Identification number
- Managed object
- Notification time
- Event type

In addition, the **detail** of an event displays:

- The reception time of the event
- A notification ID.
- Information: name of the machine from where the event originates

Events list example:

Nbr	Managed object	Notification time	Event type
4,905	↳iKirch/brest/Noeud::bzs/IT/Usagers::65585	3/29/00 8:49:00 AM	Attribute value change
4,906	↳d::cmv210/Usagers::60110/Alias usagers::3	5/30/00 8:28:00 AM	Object creation
4,907	↳d::cmv210/Usagers::60110/Alias usagers::5	5/30/00 8:30:00 AM	Object creation
4,908	↳d::cmv210/Usagers::60110/Alias usagers::6	5/30/00 8:30:00 AM	Object creation
4,909	↳d::cmv210/Usagers::60110/Alias usagers::7	5/30/00 8:31:00 AM	Object creation
4,910	↳d::cmv210/Usagers::60110/Alias usagers::8	5/30/00 8:31:00 AM	Object creation
4,911	↳d::cmv210/Usagers::60110/Alias usagers::8	5/30/00 9:31:00 AM	Attribute value change
4,912	↳d::cmv210/Usagers::60110/Alias usagers::9	5/30/00 9:33:00 AM	Object creation

6.3. ALARMS AND EVENTS FILTERING AND SORTING

Filters can be set on alarms and events in the lists: only selected alarms will be displayed in the alarms or events window.

Filters criteria can apply to any field of the alarms or events lists (notification time, managed object, etc.). Several criteria can be specified simultaneously (multi criteria search).

Example of filter on the alarms list, on the criteria "Severity = Major" and "Probable cause different from Unknown" :

Nbr	Severity	Managed object	Notification time	Additional text
2,285	Major	↳rNoeud::m699/Alvéole::0/ Carte-Interface::21	3/30/00 12:21:21 PM	Perte d'un coupleur de
2,288	Major	↳s::1/Informations liaisons inter-noeud::9-99	3/30/00 12:21:35 PM	PH:Lien sortant [99 9] e
2,304	Major	↳rNoeud::m699/Alvéole::0/ Carte-Interface::21	3/30/00 12:23:25 PM	Perte d'un coupleur de
2,305	Major	↳rNoeud::m699/Alvéole::0/ Carte-Interface::21	3/30/00 12:23:28 PM	Perte d'un coupleur de
2,485	Major	↳Tâche: Synchronisation LDAP/PBX partielle	3/30/00 1:56:18 PM	La tâche programmée
2,614	Major	↳idents ACT ou SU::Derrière ACT/ Terminal::0	3/30/00 3:31:29 PM	Perte Niveau 2 T2

At the bottom of the window, there are colored buttons for counts: 26 (red), 104 (yellow), 330 (green), 116 (blue), 1576 (purple), and a white button with 33.

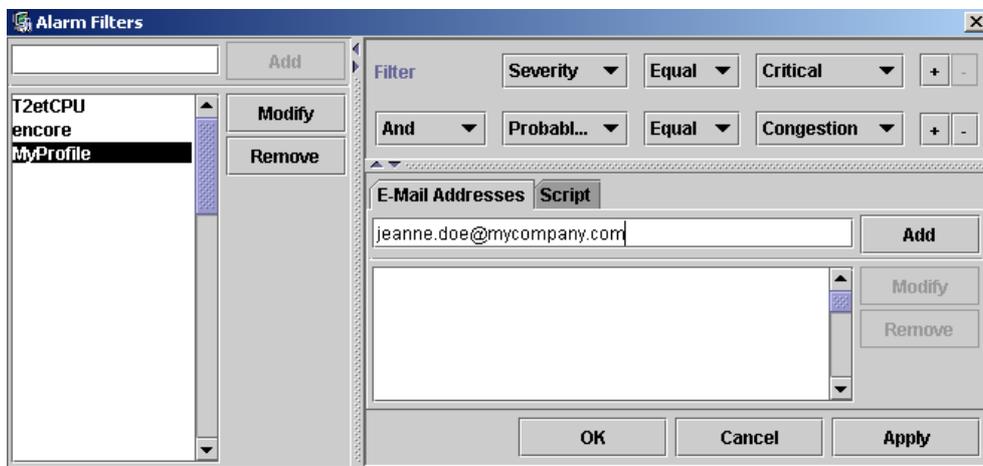
At the bottom of the window, one can see that there are 104 major alarms, from which 33 alarms have been sorted for this directory in the alarm tree.

The content of the alarm window can also be sorted on any field of the List: date, object, type, etc.

6.4. NOTIFICATION OF THE ALARMS

The user can set up profiles to launch an action, like **sending a mail** or **activating a script** performing a specific action on the reception of selected alarms.

In the example below, the alarms application sends an email to Jeanne Doe when there are critical alarms due to congestion in the network:



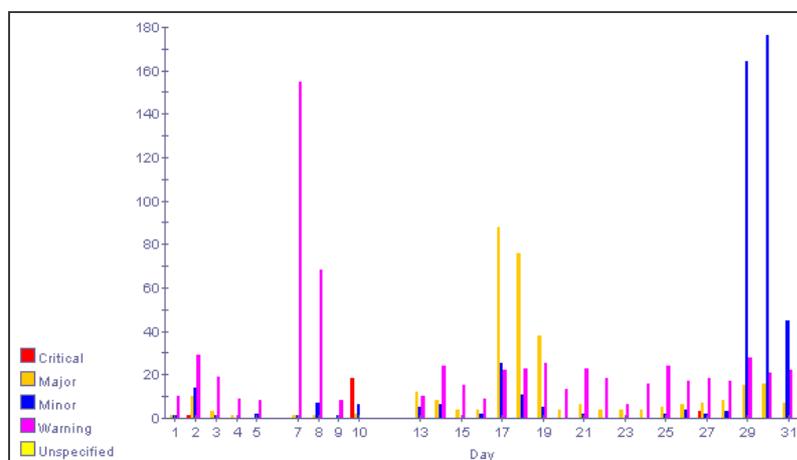
6.5. STATISTICS ON ALARMS AND EVENTS

The statistics on alarms and events provide a **follow up of the alarms** and the events in the network. These statistics are available with the alarm license (no accounting or performance licenses are needed) from OmniVista 4760 R2.1. Filters can be applied on a sub-network, a node, a board, on the severity of the alarms, and other criteria.

There are **four predefined reports** embedded in the OmniVista 4760 from R2.1:

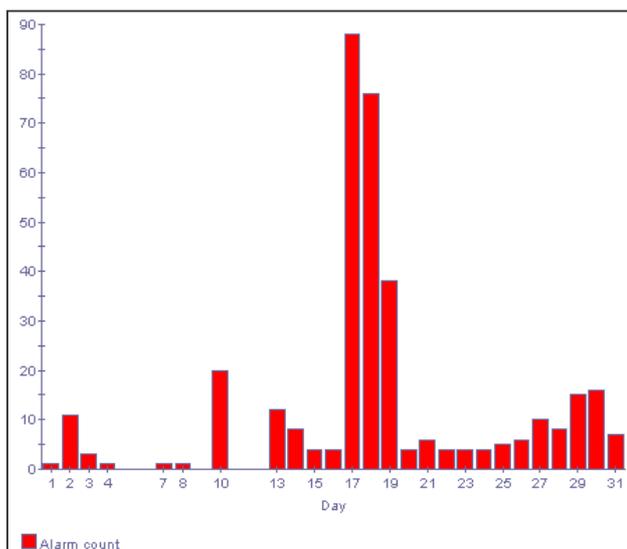
- **Daily follow up of the alarms** by severity, for one month
This report displays a synthesis of the alarms which occurred within the network during a period – previous month by default. The alarms are displayed for each day of the month, by severity: critical, major, minor, warning, unspecified, totals.
This report allows a follow-up of the alarms month-by-month, a view of peaks of alarms during a day in the month, and what the severity of these alarms was.

Example of histogram:



- **Daily follow up of the alarms for one level of severity**,
This is the same report as above, with a filter on one level of severity.

Example of histogram, with a filter on the critical and major alarms only:



- **Daily follow-up of the events** by type of event: creation, change, deletion
Each time that an administrator changes something in the OmniPCX 4400/Enterprise configuration, events are generated. For example, an event is generated when the value of a subscriber's attribute is modified. This report provides the follow-up of these actions during one month, day-by-day.
- **Resolution time of the alarms:** An external company can perform network maintenance. This report provides a tool to analyse the quality of this service by editing statistics about the average resolution time of the alarms that occurred in the network. An alarm is "cleared" when the administrator has cleared it in the alarm window.

In addition, **administrators can create their own reports on alarms** and events by modifying existing ones or creating them from scratch.

6.6. CONNECTION

For the OmniPCX 4400/Enterprise, a RMA/eRMA device is necessary in case of non permanent connection. For ABC network, the alarms coming from all the nodes can be centralized on the main node and sent to the OmniVista 4760.

For urgent alarms, OmniPCX Office calls OmniVista 4760 server and transfers the alarms.

6.7. SECURITY

There are 4 access levels to the alarms and events application:

- The **Read** level allows access to the alarm list and details, no changes allowed,
- The **Clear** level allows access, plus acknowledgement and correction of non-correlated alarms,
- The **Management** level allows access, acknowledgement, correction and suppression of all the alarms, and configuration of alarms filters to send e-mails and run scripts,
- The **All** level allows access to everything in the alarms and events application, including security.

7. TOPOLOGY

The Topology maps display **a logical view of the networks, sub-networks, nodes** (Alcatel OmniPCX 4400/Enterprise/Office) and the OmniVista 4760 application as well as the logical links between OmniPCXs.

From OmniVista 4760 R2.1.15, remote OmniPCX Office are displayed in the topology maps, and the topology option is available for OmniPCX Office and 4200.

They are **updated in real time** with the alarms, using severity colors. Only correlated alarms (alarms having a beginning and an end) are used to animate the topology.
The topology application is an option in alarms.

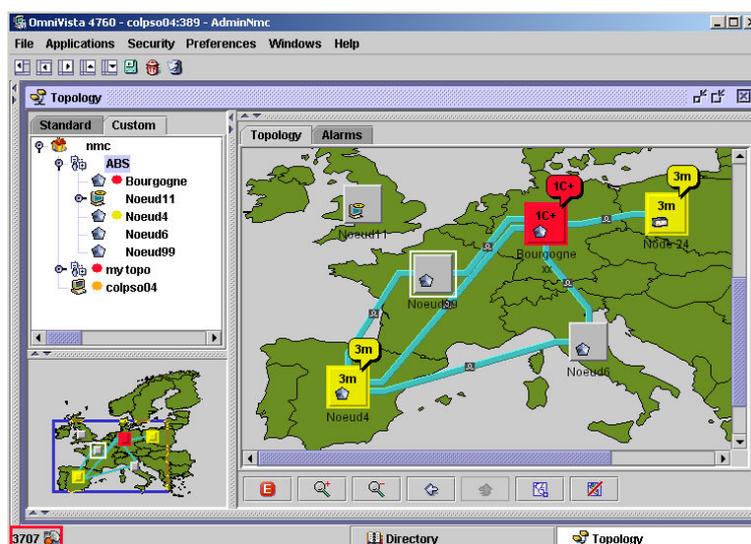
Enhanced mechanisms have been implemented such as **auto-discovery of the ABC links** between platforms, and automatic display of the sub-networks and nodes existing in the configuration.

If a problem occurs, the manager clicks on the object and accesses the faulty element. It provides everything **from a bird's-eye view to a display of the faulty board**. Thus, the network manager has a global view of the network animated in real time and can drill down on a node, a rack, a board, etc.

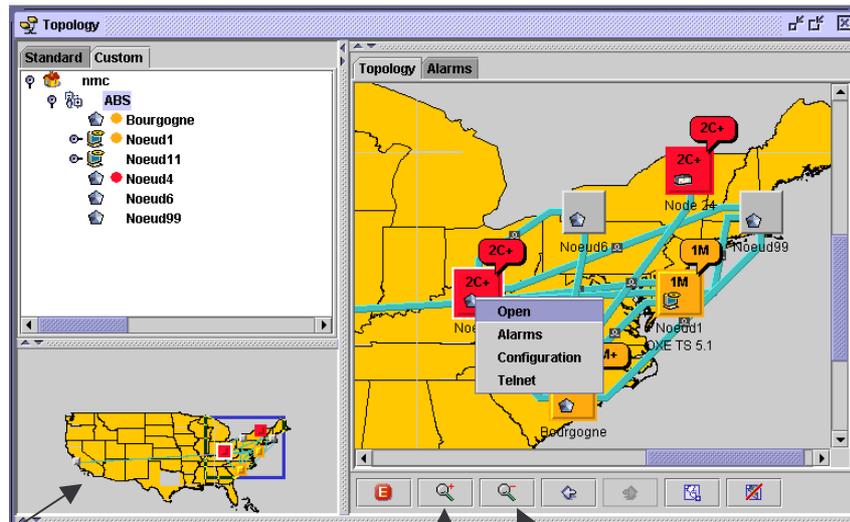
If a parameter needs to be changed, the telecom manager right-clicks on the object **to launch the OmniVista 4760 configuration of this object**, or to obtain the corresponding alarms. Telnet can also be started for direct access to OmniPCX 4400/Enterprise embedded maintenance tools.

The topology maps can be customized to display geographical aspects or a domain. The network manager can customize the background maps, and create his own topologic views by selecting the networks, sub-networks, nodes, among the existing one or by creating new objects.

Topology window :



Topology **overview** and **zoom in/out** for large networks supervision at a glance :



Overview

Zoom in Zoom out

7.1. TOPOLOGY TREE

The network manager can view the whole network, or only a part of it.

In the topology tree, the network manager can select a view in the network, a sub-network or a specified node.

The OmniVista 4760 application is displayed, and it is possible to focus in on the different applications and modules, such as Alarms, Topology, Scheduler, etc.

Near each item of the tree, a color shows the maximum severity of the alarms linked to this item.

7.2. TOPOLOGY MAPS

Multiple map levels allow the network manager to navigate from a view to the view of the sub-level by double clicking on the object. For instance, to view the different nodes of the sub-network named "UK", the network manager just double-clicks on the icon representing the sub-network.

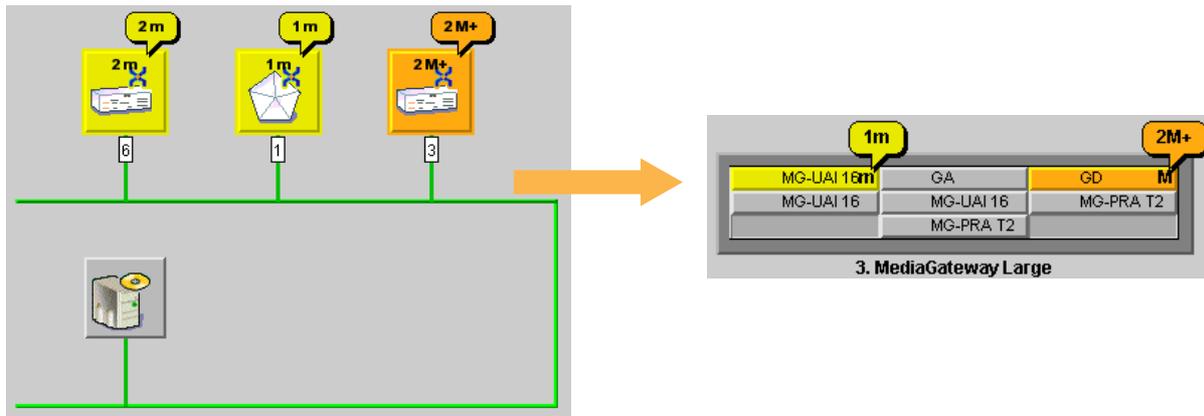
All the nodes are automatically displayed with their links, calculating their respective place so that the views cannot be in the same place.

Moreover, the network manager can customize the maps: he can change the position of the objects or add a customized background, for example, a map of the area. This configuration can be saved.

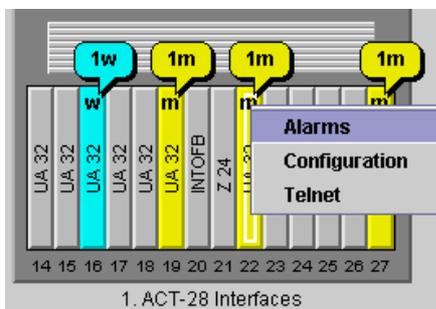
The alarm notification with the number of alarms and their severity level are associated with each object of the map. This allows the network manager to see, at a glance, **the status of the nodes and the internal links** of the networks and sub-networks, and the OmniVista 4760 applications and modules themselves.

A **graphical display of the OmniPCX 4400 and Enterprise architecture** displays the architecture of the system.

Here is an example of an OmniPCX Enterprise 5.1 IP architecture with an IP Appliance Server, 2 IP Media Gateways and a Crystal IPMG. Expansion down on a media gateway lets you see precisely which boards are faulty:



Same thing for the OmniPCX 4400 ACT and voice hub :



To see the **alarms** linked to the displayed object, or start its **configuration**, the network manager only has to right-click on the object.

For example:

The network manager detects in the topology tree that there is at least one major alarm (orange colour "1M+") in an OmniPCX Enterprise node. The manager double-clicks on the icon (or navigate in the tree), to know more.

The architecture is displayed with the crystal IPMG. By clicking on it, the manager can immediately look inside the rack of the faulty media gateway: the DECT boards have one major alarm each.

With one click in the alarms, the manager can read the alarm detail: the problem occurred the 8th of April, the diagnosis is: "Loss of a coupler. Any transmission with the coupler has become impossible ...". One of the recommendations is to reinitialise the coupler.

One more click on configuration, and the configuration of this coupler opens, so that the administrator can reinitialise it.

The screenshot shows a workflow: 1. A '1M+' alarm icon in the topology view. 2. A detailed alarm table. 3. A configuration view for the faulty media gateway.

Topology	Alarms
No.	1,501,658
Managed Object	VRéseau::PreBeta/Sous-réseau::Rt
Event Type	Equipment Alarm
Notification Date	8/4/03 11:05:52 PM
Probable Cause	Equipment Malfunction
Severity	Major
Reception Date	8/4/03 11:11:57 PM
Notification ID	19,822,643
Additional Text	Perte d'un coupleur de type DECT
Information	Diagnostic Fault ID: 2042
Diagnostic	Loss of a P1 type cpl P1 : Type of lost coupler Loss of a coupler

7.3. CUSTOMIZATION OF THE TOPOLOGY

The full customisation of the topology provides **custom views**, from a geographical point of view (customized background maps, creation of links, areas, network elements, etc.), to a technical point of view (creation of icons for specific sets, systems, etc.).

OmniVista 4760 R2.1 brings new features, which are used by large network administrators, like **alarms retargeting** to animate any created items with existing OmniPCX alarms or **script launching** to start a program when clicking on an item in the topology.

New topology toolbar (edit mode): The user can create custom views, network elements, links, labels, polygonal background, etc.



For example, this new feature makes it possible to represent the links to the operators and the private links (except internodes ABC links which are automatically created) and to “re-target” the alarms from the OmniPCX so that alarms appear automatically on these links.

An icon “voice mail” for the Alcatel 4635 can also be created, with the alarms associated with this board, so when there is an alarm concerning the voice mail, the icon becomes red, orange, yellow, etc. depending on the severity level.

User actions can be configured so that they can be launched directly from the icon on the topology map, for example, launching the configuration of a system or opening a file with information on the location of the node.

From OmniVista 4760 R3.1, a **consistency check icon** has been added in the task bar. This icon launches consistency check between the topology and the system directory.

New

In the preference of the Topology application, it is possible from OmniVista 4760 R3.1 **to choose to display or not the VPN and /or ABC links between the OmniPCX 4400/Enterprise, to enhance the quality of the views** when there are a lot of links.

The network manager can also choose to display or not the OmniVista 4760 server in the customized view, and to display or not the standard or customized view to enhance the performance of the application.

8. ACCOUNTING

8.1. OVERVIEW

Decreasing telecommunication costs and providing a better service to customers are constant concerns of any company. This is just as true for telephone usage as for any other expense; telephone cost must be controlled and efficiency measured. **OmniVista 4760 offers all companies operating on one or several sites, a way to analyse their telecommunication costs as well as the quality of their telephone service.**

OmniVista 4760 automatically **retrieves charging information from all of a company's sites equipped with OmniPCX 4400, Enterprise, Office and Alcatel 4200, whether networked or not.** Telephone costs can be **consolidated** by means of comprehensive reports.

OmniVista 4760 is equipped with a **relational database** in which information can be searched, sorted out, analysed, presented and exported according to selected criteria. This Sybase® database contains the organization map, the report definitions, the CDRs (Call Detail Records), the performance counters, the carriers' code book and the alarms and events. The database can be saved and restored.

Costs can be controlled in a **multi-operator environment.** **Simulation** features let you make the best choice. **Detailed** and **summary reports** as well as **hit lists** are available. Most typical reports are **predefined** and preinstalled to ease the task of the accountant manager. They can be **automatically** and periodically generated, **exported** and **sent by email.** Many different formats are available, like **Excel, pdf, txt** and **html.**

This powerful and secure tool communicates with OmniPCXs using standard protocols, enabling **large amounts of information to be processed quickly:** maximum number of CDRs handled per day is 200,000. The maximum number of CDRs stored in the database is 20 million. The number of CDRs beyond this amount must be archived.

The use of passwords and **partial concealment of dialled numbers** ensures confidentiality.

Call monitoring provides supervision of Telecom expenses and can automatically send an email when those expenses exceed a threshold.

The four main features of the OmniVista 4760 accounting are:

- **Organization map:** the organisation map is a tree displaying the financial organization of the company. The costs are dispatched and the reports are generated along the cost centers and the organisational levels of the tree. Historical information remains, so that the Administrator can see the changes that occurred inside the organization of the company. **The accounting tree represents the past and present accounting organization of the company,**
- **Accounting management** allows the administrators **to manage the carriers' fees,** to apply specific costs, to ensure confidentiality. Advanced features such as **operators' comparison** and **simulation** provide reports on what would have been the telephone costs with another carrier, on selected directions.
- **Monitoring (tracking):**
The option Tracking/Monitoring provides a **graphical view** called "Tracking status" and a **notification by email or alarms in case of threshold crossing.** In addition, the accounting application provides predefined or customized reports on Monitoring, or threshold crossing, using cumulative counters.
- **Reporter tool**
The main function of the accounting application is to produce reports on telecommunication costs, according to the parameters provided in the accounting management and to the information provided by the OmniPCX in the CDRs generated after each call. Using the Reporter, the user can generate **predefined or personalized accounting reports.** The Reporter is also used to manage reports on Performance and Alarms.

For more details on the specific accounting features for OmniPCX Office and Alcatel 4200, see the white paper: *Accounting specific features for OmniPCX Office and Alcatel 4200*.

8.2. ORGANIZATION MAP

This graphical view of the financial organization includes local levels, cost centers, people, subscribers, data terminals, etc. It makes it easy to find an object within the company.

This organizational tree is **automatically updated from the OmniPCX** regarding cost centers, phone sets, attendants, trunks groups, etc., except for OmniPCX Office/4200 where only the subscribers and the trunk groups are automatically updated.

But the organization map can also be **updated from the company directory** regarding people or customized by the network manager, with no limit concerning the number of hierarchical levels (company directory is not available for OmniPCX Office/4200).

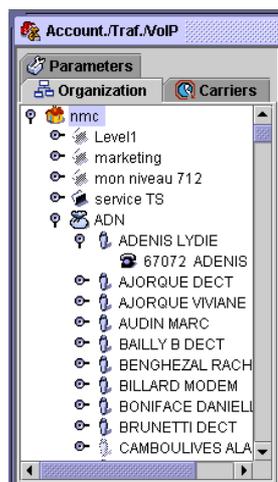
The organization map can be printed.

All the objects of the organization map are shown in a table format (levels and extensions):

Number of elements into organization			
Type	Active	Isinactive	All
Meta company	1	0	1
Local level	0	1	1
Local level	0	0	0
Cost center	10	0	10
Directory unity	0	0	0
Person	0	0	0
All types of levels	11	1	12

Number of elements into organization			
Type	Active	Isinactive	All
Subscriber	163	0	163
Attendant	0	0	0
Attendant group	0	0	0
Station group	0	0	0
Voice mail	1	0	1
Data terminal	7	0	7
Project	0	0	0
Trunk group	1	0	1
Link	2	0	2
Ticket entity	0	596	596
All types of extensions	174	596	770
Tickets			25681

Example of organization map:

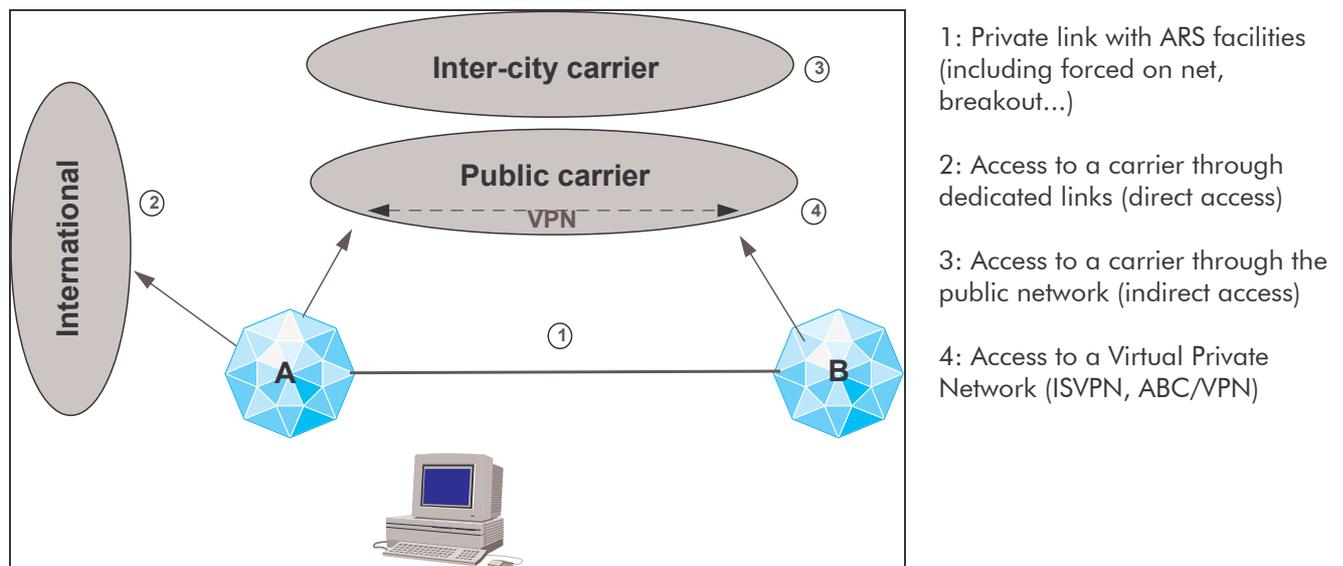


8.2.1. Updating the organization map

Changes occur in the company organization: moves, new task forces, acquisitions, etc. In OmniVista 4760 configuration, the network manager and any authorized users can create, modify, and delete cost centers, sets, abbreviated/speed dialling numbers, etc. The accounting organization tree will be **updated automatically**. **A history of the organization map is maintained** to assign costs to the right objects. If the subscriber name of the extension changed on January 1, the reports generated today from last year will still indicate the former name, and the reports on this year will have the current name. The network manager can define a **retrospective validity date**.

8.3. NETWORKING AND MULTI-CARRIER SERVICES

The following drawing sums up the different networking services provided by OmniPCX 4400/Enterprise:



- 1: Private link with ARS facilities (including forced on net, breakout...)
- 2: Access to a carrier through dedicated links (direct access)
- 3: Access to a carrier through the public network (indirect access)
- 4: Access to a Virtual Private Network (ISVPN, ABC/VPN)

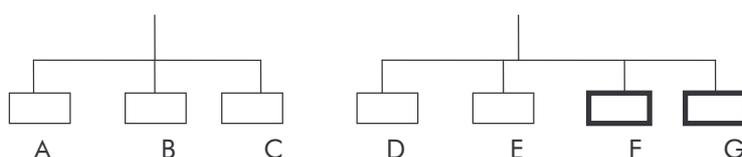
8.4. ACCOUNTING DOMAINS MANAGEMENT

The accounting domains management provides **separate billing for each company** or entity. These companies can share the same PBX, or be **distributed on several sites**.

In the organization map, different branches are created, corresponding to the different companies or departments to manage. The accounting manager creates domains, including one or more branches. An access level is assigned to each user of the accounting application, corresponding to a domain. It means that **the user has access to a limited section of the organization map** :

In the example below, the domain management could be defined as follows:

- User X is limited to Company A
- User Y is limited to Company B
- User Z is limited to departments F and G



The information contained in the reports generated by the User Y will concern only Company B.

Depending on his access level, the User can create, modify, delete reports and report definitions, but in the generated reports, **only information from the user's domain will appear.**

Domains are created manually; there is **no limit in the number of accounting domains.**

The administrator of the accounting system can see the whole Organisation map with all the companies, managed on a single server. The administrator can create, delete, and modify all the reports definitions and reports for all the companies. He can create customised reports definitions for a company. He can also automatically generate and periodically send by email the reports to the company's accounting users.

8.5. CUMULATIVE COUNTERS AND ARCHIVE/RESTORE

For large networks, the amount of accounting data to be managed can become quite large in a short time. For example, on average, 20,000 subscribers generate 200,000 CDRs a day (each subscriber making five outgoing calls and receiving five calls), which means four million CDRs a month, 48 million CDRs a year, etc. Managing so many CDRs may have some consequences on the system performance: how much time does it take to generate a report on a 12 months period with 20,000 subscribers ? And what about database saturation, with 48 million CDRs plus the reports stored on it ?

To prevent performance decrease and database saturation, two different strategies have been implemented in OmniVista 4760, to increase performance for large networks and/or high traffic.

The first strategy is to extract the most important information from the CDRs, and to store only this significant information in order to save place. For accounting, the most important information is the cost, the duration, the number of calls for each object of the organisation map: People, cost center, departments, trunks, etc. Therefore **cumulative counters** are automatically created, to store this important information and access it quickly.

However, what about the CDRs containing the detailed information on each call? If they stay on the hard disk, no space is saved. If they are deleted, what about the detailed information that may be useful (e.g., in case of a claim)?

The second strategy, which is complementary to the cumulative counters, is **to automatically archive the oldest CDRs** to keep only the most recent detailed information (e.g., three last months). As soon as the CDRs are safely stored on an external device, they can be deleted on the local disk. A past period can be restored by time range for claims and access to more detailed information. New reports can be generated on these CDRs.

These two features are included in OmniVista 4760 accounting, for **faster report generation for total reports, for a long period**, and **to store information for several years**, for medium and large networks. The archive of the oldest CDRs means reduced space on the system disk, better performance, while detailed reports are always possible due to the restoration of the archived CDRs.

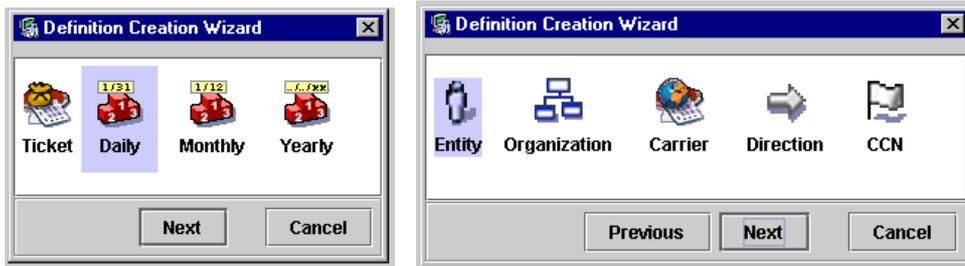
8.5.1. Cumulative counters

Cumulative counters are automatically calculated by the OmniVista 4760 at the end of CDRs loading. There are counters on duration, costs and number of calls, day per day, month-by-month and year-by-year, for each object of the organisation map: sets, trunks, cost centers, carriers, directions, etc.

Cumulative counters are used in predefined reports to allow quick generation of reports over long periods (e.g., 12 months), while deleting CDRs.

See the list of **predefined reports** based on cumulative counters in the section Predefined reports definitions.

Customised reports may also be generated using cumulative counters information; in this example, the Wizard helps to generate a customised total report for each set daily:



8.5.2. CDRs' Archive/Restore

Archive may be automatic or manual when selecting a period. Archive begins automatically after one month of CDR loading.

The CDRs can be stored on a selected disk which can be a local or an external one; files are sorted by node and by date. Archived files are restored manually. Archive/restore can be between different OmniVista 4760 versions (release 1.5 or later version).

8.6. SUBSCRIPTIONS

The administrator can create customized reports including **fixed costs**: Carriers fixed costs, costs depending on the type of set, the use of voice mail, DDI/DID and automatically generate, export them, send them by mail, etc. The reports can include fixed costs + telephone costs. These costs can be daily, weekly or monthly costs.

Example 1: because of this new feature, the administrator can create reports including the carriers' fixed costs (e.g., monthly subscriptions) + communication costs.

Example 2: for leased sets or offices, the administrator can generate a billing report including the invoiced cost (carrier's communication cost + additional fees if necessary) plus cost of the leased set (depending on the type of set), additional cost for the voice mail usage, the DDI/DID, etc.

Subscriptions allow the allocation of costs, even if the subscriber didn't use his set during the period; it means that a subscription report can be generated (and exported, sent by mail) even if no CDRs were generated during the period.

The OmniVista 4760 automatically manages the assignment of fixed costs of telephone equipment. There is no need for the administrator to know which type of set the user has, or if the set has been changed, or if the user has voice mail or not, or a DDI/DID. Due to the automatic synchronisation between the OmniVista 4760 and OmniPCX 4400/Enterprise, as soon as there is a change (e.g., the assignment of a mailbox or a 4068 instead of a DECT), OmniVista 4760 knows it and automatically changes the cost from then on. This feature is only available for OmniPCX 4400/Enterprise.

Subscriptions allow telephonic cost assignment, with no increase in the TCO.

To assign costs easily, the administrator creates cost profiles (similar to invoiced costs) that are stored and applied to different objects of the organisation map: sets, costs centers, departments, companies, trunks, etc.

Example: "Students profiles A", from 01/01/2004 to 12/31/2004, monthly costs:

- For sets: for an analog phone = 0.74 Euro (approximately \$0.99 USD), for a 4074 set (DECT) = 2.00 Euros (approximately \$2.68), for a 4038 = 2.30 Euros (approximately \$3.08)
- For a voice mail (4035 type): 1.30 Euro (approximately \$1.74)
- For a DDI/DID: 2,00 Euro (approximately \$2.68)
- Various (not automatically managed by OmniVista 4760): 100 Euros (approximately \$134.01) for rooms of type A.

8.6.1. Subscription reports

From OmniVista 4760 R2.1, there are six new predefined subscription reports: annual synthesis, monthly synthesis, monthly synthesis by cost center, detailed report by cost center, monthly subscription cost, and detailed invoice.

In addition, customized reports including fixed costs or fixed costs plus invoiced costs in the same report can be created. Example 1: *Carrier monthly total report* with subscriptions + communication costs. Example 2: Weekly report "*Costs by directory entry*" including fixed costs plus invoiced costs.

8.7. CALL MONITORING

8.7.1. Tracking status

Tracking status, also called monitoring, is an option of the accounting. It provides a **display and a notification by email or alarms in case of threshold crossing**.

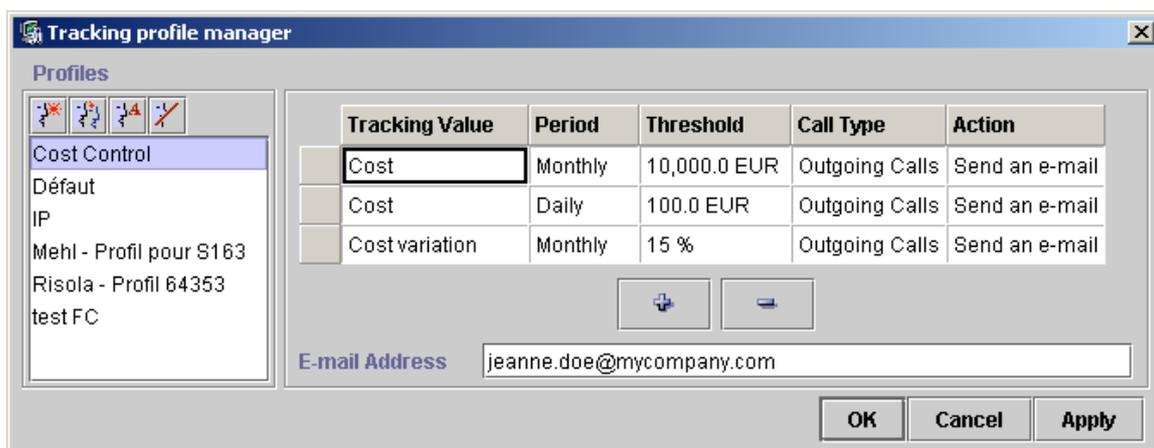
The user can create **profiles** to set up thresholds for:

- Accounting: **number**, **cost** and **duration** of the calls, or a **variation** of these data
- Performance (1): **Duration of exceeding R1** threshold, **rate of abandon** on called numbers and on attendant groups
- Voice over IP Performance (1): **VoIP sent/received volume** and **out of range** records (tickets).

These thresholds can apply on different **call types**: Incoming, outgoing, outgoing private calls, DISA (direct incoming system access) calls (1) and subscription.

When the cumulative counters exceed these thresholds for the period and the object, an email is sent to one or more addresses, or an alarm is generated.

Example of a "Cost control" profile that can be applied to an item in the organization map (a set, a cost center, a department, a trunk, etc.): when the monthly telephone cost goes beyond 10,000 Euros (*approximately \$13,399.40 USD*), or the daily cost goes beyond 100 Euros (*approximately \$134.01*), etc., an email is sent to the user Jeanne Doe:



(1) Thresholds on Performance, VoIP Performance and DISA are not available for OmniPCX Office - Performance and VoIP Performance are only available if the corresponding licenses are implemented in the OmniPCX 4400/Enterprise.

In the **tracking status**, only accounting information is displayed: the thresholds are displayed as red arrows. In the example, the administrator can see that the monthly costs of the outgoing calls exceeds the threshold (in addition to a notification by email):

Daily Counters	Monthly Counters
July 20, 2003	July 2003
Incoming Calls - Duration 00:42:42	Incoming Calls - Duration 2633:04:45
Incoming Calls - Number of Calls 13	Incoming Calls - Number of Calls 57942
Outgoing Calls - Cost 5.8	Outgoing Calls - Cost 58,639.98
Outgoing Calls - Duration 01:47:39	Outgoing Calls - Duration 6406:51:51
Outgoing Calls - Number of Calls 16	Outgoing Calls - Number of Calls 136868

8.7.2. Monitoring reports

The purpose of Monitoring reports is **to control peaks of traffic and cost**. Tracking status thresholds are used (see previous paragraph).

When the cumulative counters go beyond these thresholds for the period and the object, monitoring reports show the value above this threshold.

Predefined monitoring reports

There are **3 predefined reports on monitoring** from OmniVista 4760 R2.1:

- Phone monitoring: daily duration of the calls above the threshold for a phone
- Group of attendants monitoring: abandoned calls rate for attendant groups
- Trunk group monitoring: traffic on trunks beyond R1 threshold

These last two reports are only available for OmniPCX 4400/Enterprise.

Additional monitoring reports can be created through **customized reports**.

8.8. TICKET COLLECTOR

OmniVista 4760 from R2.1 provides an interface "Ticket collector" to export the OmniPCX CDRs to an external device (billing application, etc.). This interface is supported through the AAPP (Alcatel Application Partner Program), and is orderable through the OmniVista 4760 license Ticket Collector.

The Ticket Collector provides the export of OmniPCX Office, 4400/Enterprise and Alcatel 4200 CDRs in various files, stored in a local or external directory in the PBXs' format.

8.9. PREDEFINED ACCOUNTING REPORT DEFINITIONS

OmniVista 4760 comes with a set of ready to use report definitions: total reports, cumulative reports, detailed reports, hit lists, traffic volume analysis, subscription, monitoring and DISA reports. These report definitions meet most needs: controlling and assigning costs, analyzing service quality, re-billing, telephone costs control panel, usage monitoring (e.g., international calls).

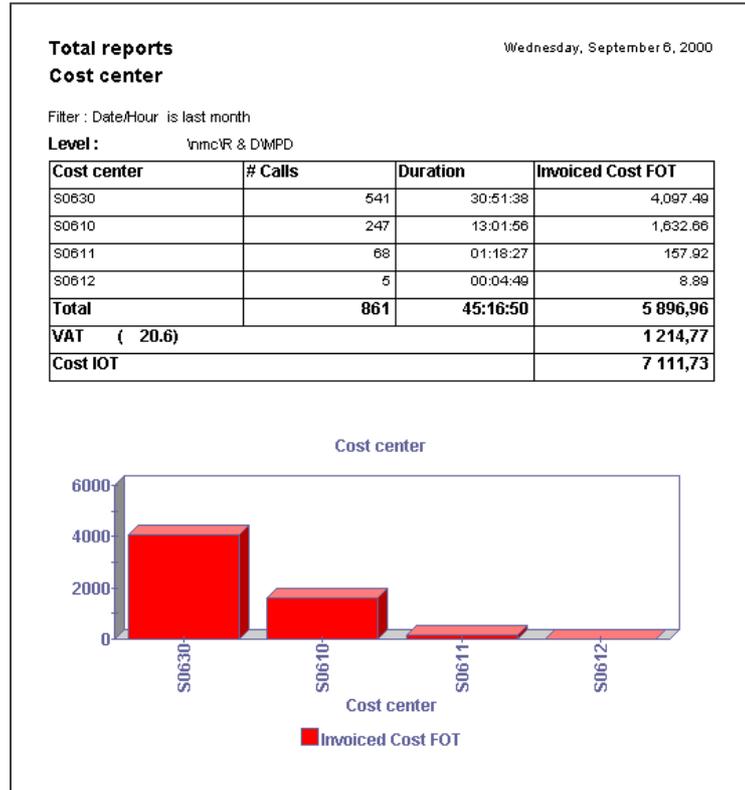
The following predefined report definitions are delivered within the application:

- **Total and cumulative report definitions**

Produce a scoreboard of the telephone costs and allow allocation of these costs within the organization, classified by:

- Directory entry (person, group, room) (1)
- Phone
- Cost center
- Level of the organisation map (department, country, company, ...)
- PIN (Private Identification Number) (1)
- Project code
- Direction (local, national, etc.)
- Comparison carrier
- Direct carrier
- Indirect carrier

Example of total report:



(1) not available for OmniPCX Office/4200

- **Detailed report definitions**

Give information about each call for each:

- Directory entry (1)
- Phone
- PIN (Private Identification Number) (1)
- Project code

Example of detailed report:

Detailed reports					
Sets					
Filter : Date/Hour is last month,					
Name begin with ti					
Pers./Prof. : Professional					
Cost center : S0633					
Name : Jean Tinguely					
Extension : 68852					
Date/Hour	Called number	First carrier CCN	1st carrier dir. type	Duration	Invoiced Cost FOT
8/1/00 8:50:30 AM	0014735----	Ile de France	National	00:07:03	13,01
8/1/00 10:56:52 AM	0014735----	Ile de France	National	00:01:30	2,77
8/1/00 10:59:34 AM	0016092----	Ile de France	National	00:00:39	1,20
8/1/00 11:00:58 AM	0013070----	Ile de France	National	00:00:02	0,62
8/1/00 2:22:21 PM	0014673----	Ile de France	National	00:24:38	46,46
8/1/00 2:47:16 PM	0014735----	Ile de France	National	00:04:34	8,43
8/1/00 3:10:09 PM	0014735----	Ile de France	National	00:04:32	8,36
8/1/00 4:01:21 PM	0014735----	Ile de France	National	00:03:26	6,33
8/1/00 4:23:39 PM	0014735----	Ile de France	National	00:01:18	2,40
8/1/00 4:27:40 PM	0014469----	Ile de France	National	00:00:56	1,72
8/1/00 4:28:52 PM	0014417----	Ile de France	National	00:00:20	0,62
					1/1

- **Traffic analysis report definitions**

Allow measurement of the traffic for both outgoing and incoming calls:

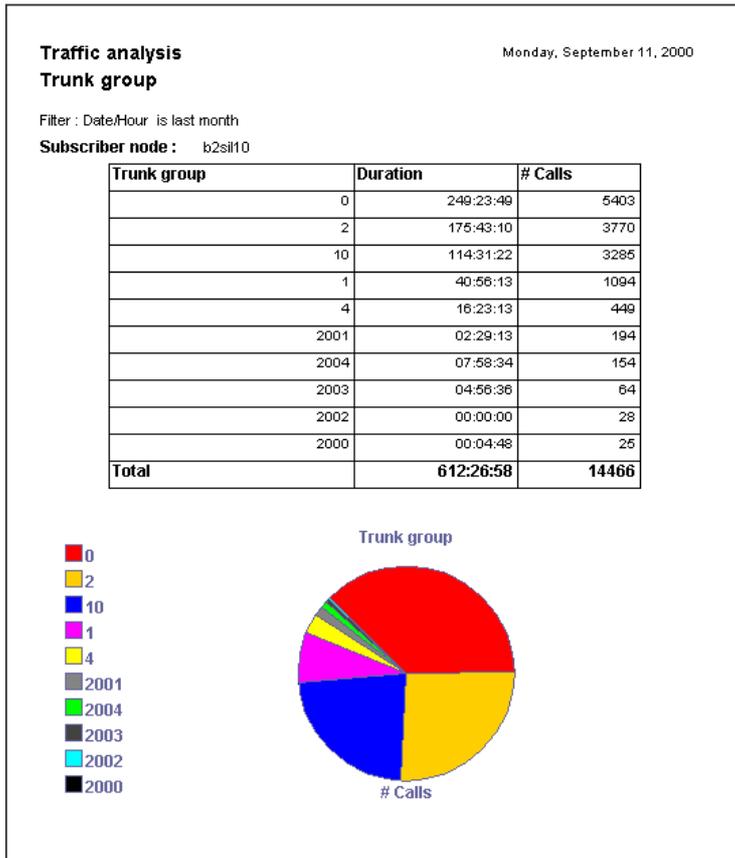
- **Trunk group** is the total duration and number of outgoing and incoming calls by trunk groups
- **Abbreviated (speed dialing) numbers** is the hit list of the most frequently called abbreviated numbers

And give information about calls exceeding a threshold:

- **Duration threshold** provides the detail of the call duration (called number, etc.), which exceeded the threshold, by set, for outgoing calls.
- **Cost threshold** is the same report with a cost threshold

(1) not available for OmniPCX Office/4200

Examples of traffic analysis reports:



Traffic analysis Monday, September 11, 2000

Cost threshold

Filter : Date/Hour is last month,
 Invoiced Cost FOT superior 2.00
 Name : Cesaria Evora
 Extension : 65489

Date/Hour	Called number	Duration	Invoiced Cost FOT
8/16/00 9:25:22 AM	0014649----	00:05:29	10.12
8/24/00 8:06:54 AM	0014012----	00:01:16	2.34
8/28/00 10:03:22 AM	0013433----	00:01:53	3.47
8/28/00 1:54:36 PM	0038933----	00:02:43	8.35
8/28/00 3:02:23 PM	0038933----	00:01:23	4.25
8/28/00 3:04:05 PM	0038933----	00:01:51	5.69
8/28/00 3:52:22 PM	0038157----	00:03:41	11.33
8/29/00 10:03:15 AM	0038933----	00:01:52	5.74
8/29/00 10:36:16 AM	0013433----	00:14:31	26.78
8/29/00 3:41:01 PM	0013030----	00:15:23	28.38

Name : Chapman Tracy
 Extension : 65621

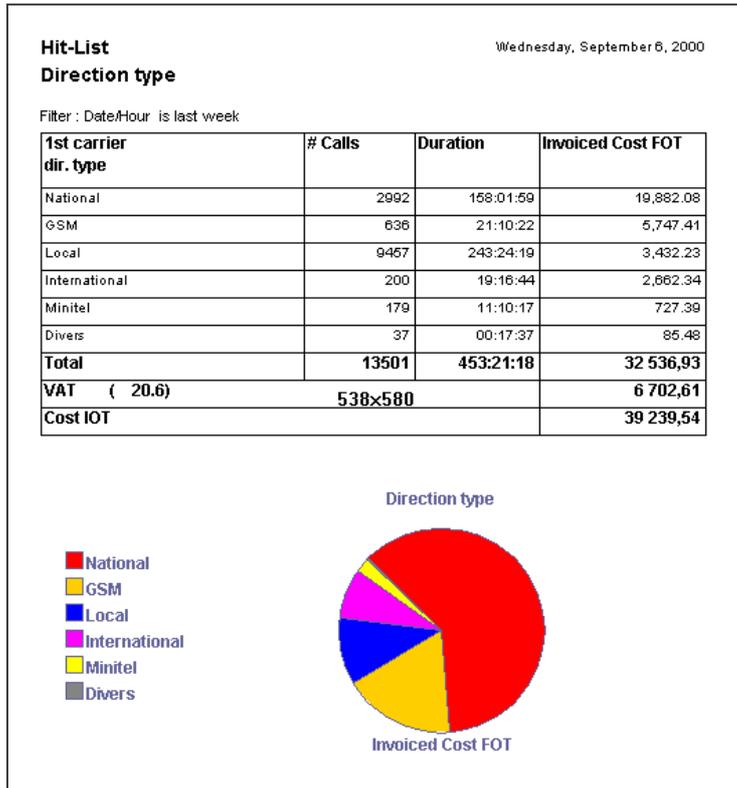
Date/Hour	Called number	Duration	Invoiced Cost FOT
8/31/00 2:18:29 PM	0014104----	00:08:26	15.56

- **Hit lists**

Give the top N most costly extensions, most costly directions etc. (N: user defined, 10 by default)

- Cost by directory entry (1)
- Cost, duration by set
- Cost, duration by cost center
- Number of called numbers
- Cost by directions

Example of Hit list:



- **Subscription report definitions**

From OmniVista 4760 R2.1, there are four predefined report definitions on subscription, detailed in the paragraph 7.6.1.

- **DISA report definitions**

From OmniVista 4760 R2.1, there are four predefined report definitions for **DISA use** (1): Hourly, daily, monthly synthesis of the calls, and monthly DISA use.

- **Monitoring report definitions**

From OmniVista 4760 R2.1, there are three predefined report definitions on monitoring, detailed in section 7.7.2.

8.10. CUSTOMIZED ACCOUNTING REPORT DEFINITIONS

Customized accounting report definitions can be created from scratch or out of existing report definitions in order to fulfill specific needs or adapt the presentation.

This allows specification of the information to be presented, the sort and selection criteria, the headers and other data (see section Reporter).

(1) not available for OmniPCX Office/4200

9. PERFORMANCE AND TRAFFIC ANALYSIS

As your organization grows, your communication system needs to be permanently monitored:

- Is your IT infrastructure able to support growing VoIP traffic?
- Is your on-site infrastructure (DECT/PWT) well designed?
- Does your installation have enough bandwidth to handle the overall traffic to carrier networks?
- Is VoIP communication quality acceptable?
- Do your attendants answer calls fast enough?

Network managers expect their NMS to allow them to optimize the capacity, ensure the quality of the network, support a wireless DECT/PWT infrastructure, save telecommunications costs, and allow them to monitor the quality of telephone service.

Here are some examples of information provided by Performance:

- Measurement of response time
- Measurement of the VoIP traffic on the data network
- Statistics on the quality of VoIP communications
- Statistics on the line-occupancy ratio for incoming calls
- Reports on attendant and subscriber traffic
- Occupancy rates of the different internal and external links
- Average time spent waiting for an attendant
- Base station traffic analysis for capacity control of cells

This information is provided through predefined or customized reports. OmniVista 4760 allows network managers to schedule reports and then receive them by automated email, as well as access them from anywhere on the intranet.

9.1. APPLICATION PRINCIPLES

The Performance application and IP Performance option are related to OmniPCX 4400 and Enterprise. For OmniPCX Office and Alcatel 4200, there is traffic analysis information available in the accounting application.

For more details on the specific accounting features for OmniPCX Office and Alcatel 4200, see the White paper: Accounting specific features for OmniPCX Office and Alcatel 4200.

The reports are based on the information contained in the OmniPCX 4400/Enterprise traffic observation counters, and on the CDRs generated by the OmniPCX 4400/Enterprise for each communication. The counters files are generated every 30mn and every day with the values of the counters for the different entities (trunk groups, attendants, attendant groups, DECT, IP). They are retrieved from the OmniPCX 4400/Enterprise by file transfer (FTP) and stored in the OmniVista 4760 database.

Two methods are used to limit the amount of data to be stored in the database:

- Filters can be configured to limit the import of counters on defined entities,
- From the 30mn counters provided by the OmniPCX 4400/Enterprise, the OmniVista 4760 generates total counters each day, month and year. Various periods of storage for these counters are configured by default.

9.2. PERFORMANCE PREDEFINED REPORT DEFINITIONS

A set of predefined report definitions is provided per half hour, hour, day, month, on:

- Trunk groups
- Attendants
- Attendant groups
- Called extensions
- Stations
- DECT/PWT

Dynamic filters in those report definitions allow the network manager to generate a report for a specified period, a node in the network, an object of the node.

The network manager can see at a glance, the result of his reports through a table and graphical layout. The manager can customize and save his own performance report definitions.

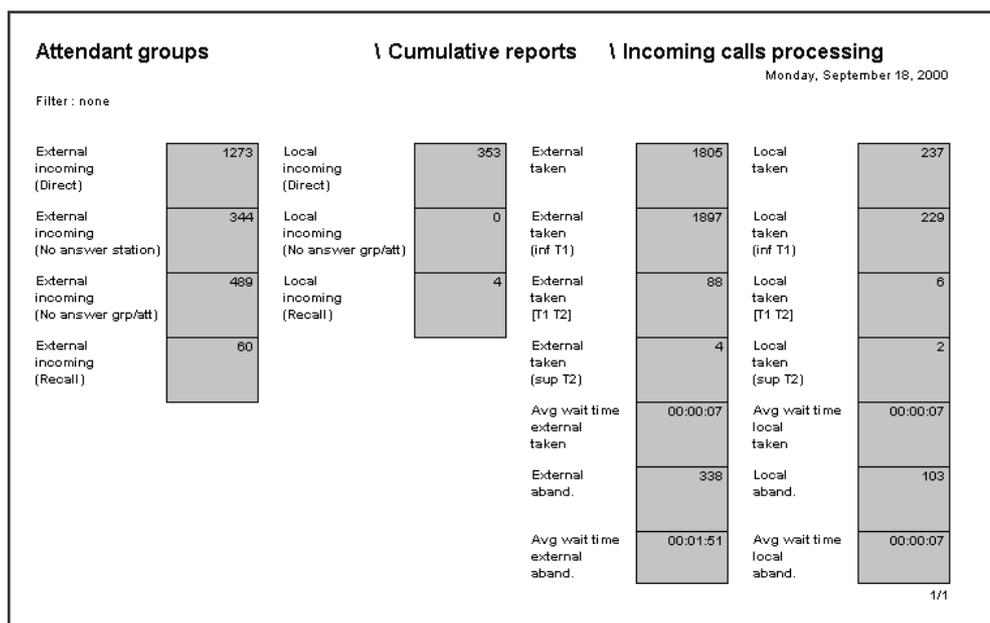
The network manager can also automatically schedule the generation of a report, e.g., create each month a report on the average waiting time for an attendant group.

The network manager can also export the OmniVista 4760 reports to a standard spreadsheet like Excel in order to archive, redesign, or include it in an external billing report.

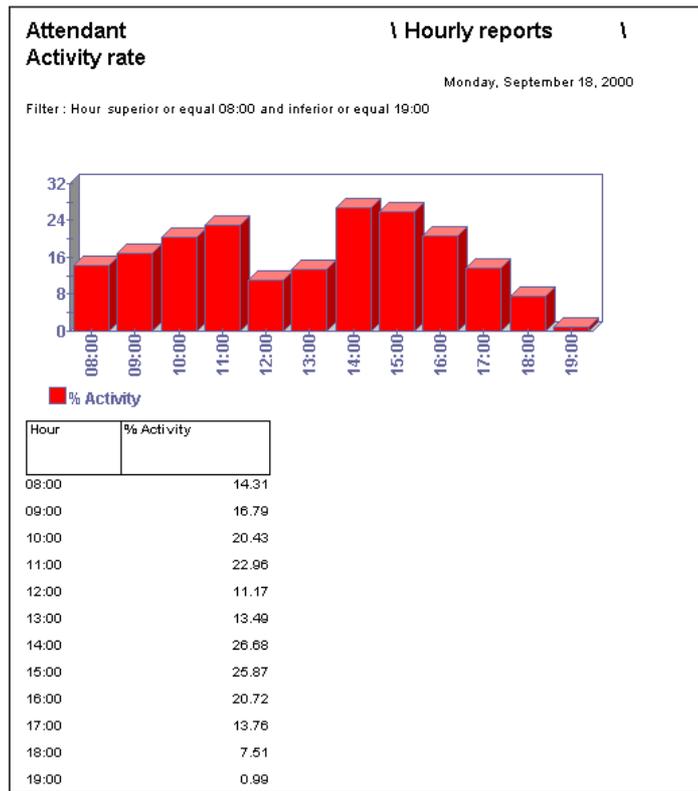
Examples of predefined performance report definitions:

- Traffic for trunk groups, hit list
- Incoming calls processing for the attendant groups
- Distribution of calls for one attendant (incoming/outgoing)
- Called extension average waiting time

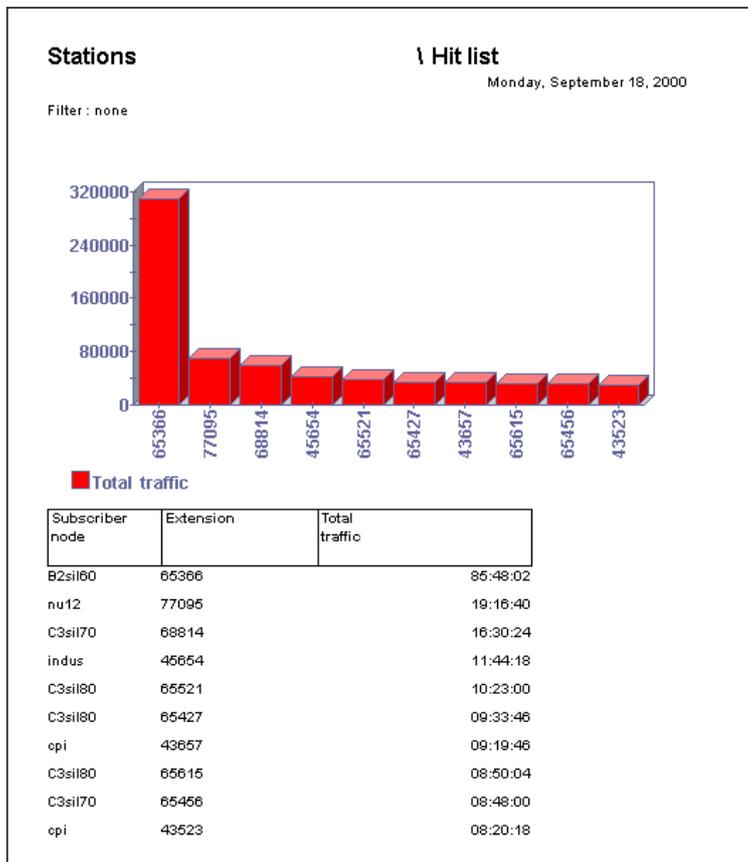
Example : Control panel of the incoming calls processing for the different attendant groups



Example of hourly report: activity rate of the attendants



Example of hit list: 10 first stations sorted by call duration, incoming and outgoing



9.3. MONITORING VOICE OVER IP COMMUNICATIONS

OmniVista 4760 from R3.0 **monitors voice over IP communications**, for a better follow-up of the VoIP traffic and quality, and an easy integration of VoIP in the customer's data network. Its **long term trend reporting** capability helps the administrator for IT infrastructure provisioning.

- **Voice over IP volume monitoring** allows a proactive management of VoIP traffic and fine-tuning of the network capacity,
- Monitoring the **quality of VoIP calls** allows anticipation of decreases in the quality of service and consequently adjustment of the switches/routers before a problem occurs.

VoIP Performance is an option of the Performance application of OmniVista 4760.

From OmniPCX Enterprise 6.0, VoIP CDRs are created by **IP phones** (e-Reflexes terminals 4035 IP, 4020 IP, 4010 IP and IP Softphones 4980, excluding IP Plugwares 4098RE/FRE) and **VoIP equipments** (Int-IP for 4400 racks, GA/GD for MG, IP voice mails 4645), and sent to the call server at the end of the call.

New From OmniVista 4760 3.1, VoIP CDRs from 8 series are supported.

There are two CDRs per IP segment.

9.3.1. VoIP reports

The VoIP reports are generated through the OmniVista 4760 **Reporter** application: all types of detailed and summary reports, hit parades, predefined and customized reports are available.

VoIP Performance reports are divided in two parts : **Traffic analysis** and **quality of transmission (out-of-range)**.

- **Traffic analysis reports** gives information about volume of sent, received, and lost packets. This volume is calculated by OmniVista 4760, and includes the voice and SID (silence identification) packets, framing and compression algorithm.
- **Quality of transmission** gives information on the parameters that may decrease the quality of the voice communication:
 - Roundtrip delay: In OmniPCX Enterprise CDRs, it is the round trip delay (in millisecond) to send a packet.
 - BFI (Bad Frame Interpolation): It is an extrapolation packet sent by the DSP, when it did not receive anything from the network, because of too much delay or loss of the packets. PLC (Packet Lost Concealment) is a way to do that. There are two parameters related to BFI:
 - BFI burst (or BFI concentration) is the % of BFI during 10s of voice communication. Depending on this %, a counter is incremented.
 - BFI rate: it is the number of BFI/number of packets during the communication.

In OmniVista 4760 from R3.0, a **threshold** is set up for each parameter; when one or more values exceed these thresholds in a VoIP CDR, this CDR is "out-of-range".

For example, the threshold for the roundtrip delay is 150ms. When the roundtrip delay exceeds 150 ms in a CDR, it is out-of-range.

The analysis of the out of range CDRs provides a global follow-up of the VoIP quality.

The VoIP reports can be generated:

- Between **two IP addresses or range of addresses**. Periodic reports (by half hour, day or month) are not available for this kind of reports because they are based on pre-calculated counters,
- By **OmniPCX Enterprise equipment**: node, IP Phones, GD/GA and Int-IP boards.

A filter can define the time frame to be applied when generating the report.

There are **22 VoIP predefined reports**:

Traffic analysis on IP addresses:

Predefined reports with filters on date/time, PCX, sender/receiver IP address:

1. Summary report
2. Detailed report

Traffic analysis on equipments:

Predefined reports with filters on date/time, PCX, sender IP address, equipment type and number:

3. Summary report
4. Detailed report
5. Half hour report on volume
6. Daily report on volume
7. Monthly report on volume
8. Half hour report on duration
9. Half hour report on Erlangs
10. Hit list on Erlangs
11. Hit list on volumes

Quality of the communications on IP addresses:

Predefined reports with filters on date/time, PCX, sender/receiver IP address:

12. Summary report
13. Detailed report

Quality of the communications on equipment:

Predefined reports with filters on date/time, PCX, sender IP address, equipment type and number:

14. Summary report
15. Detailed report
16. Half hour report on out of range tickets
17. Half hour report on out of range tickets distribution
18. Daily report on out of range tickets
19. Daily report on out of range tickets distribution
20. Monthly report on out of range tickets
21. Monthly report on out of range tickets distribution
22. Hit list of out of range tickets

Examples of Voice over IP Performance predefined report:

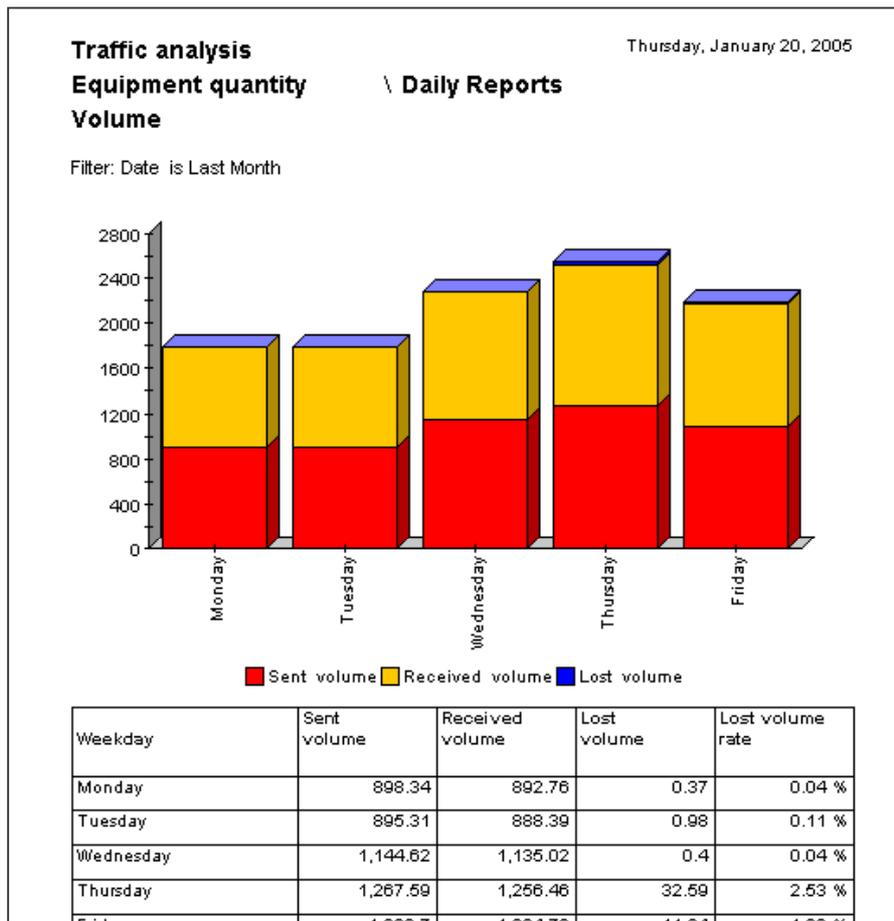
Traffic analysis on IP equipments, summary report:

Traffic analysis		Thursday, January 20, 2005	
Equipment quantity			
Summary Report			
Filter: Date/Hour is Last Quarter			
Sent packets	6006758	Sent volume	984.58
Received packets	5975669	Received volume	977.26
Lost packets	66102	Lost volume	10.77
Lost packets rate	1.09 %	Lost volume rate	1.09 %

Traffic analysis on IP addresses, detailed report:

Traffic analysis		Thursday, January 20, 2005							
IP Addresses									
Detailed Report									
Filter: Date/Hour is Last Month,									
Sender IP address containing 155.132,									
Receiver IP address containing 172.26.27									
Sender IP address :	155.132.133.244								
Receiver IP address :	172.26.27.171								
Date/Hour	Duration	Sent packets	Sent volume	Received packets	Received volume	Lost packets	Lost volume	Lost packets rate	Lost volume rate
12/22/04 10:26:06 AM	00:12:11	36766	6.03	36769	6.03	0	0	0 %	0 %
12/22/04 10:29:44 AM	00:01:31	4576	0.75	4580	0.75	0	0	0 %	0 %
12/22/04 5:18:44 PM	00:00:28	1454	0.24	1455	0.24	0	0	0 %	0 %
12/22/04 5:27:02 PM	00:05:10	15583	2.56	15586	2.56	0	0	0 %	0 %
12/23/04 4:01:38 PM	00:01:06	3333	0.55	3335	0.55	0	0	0 %	0 %
12/23/04 4:02:12 PM	00:00:24	1215	0.2	1219	0.2	0	0	0 %	0 %

Traffic analysis on equipments, daily volume:



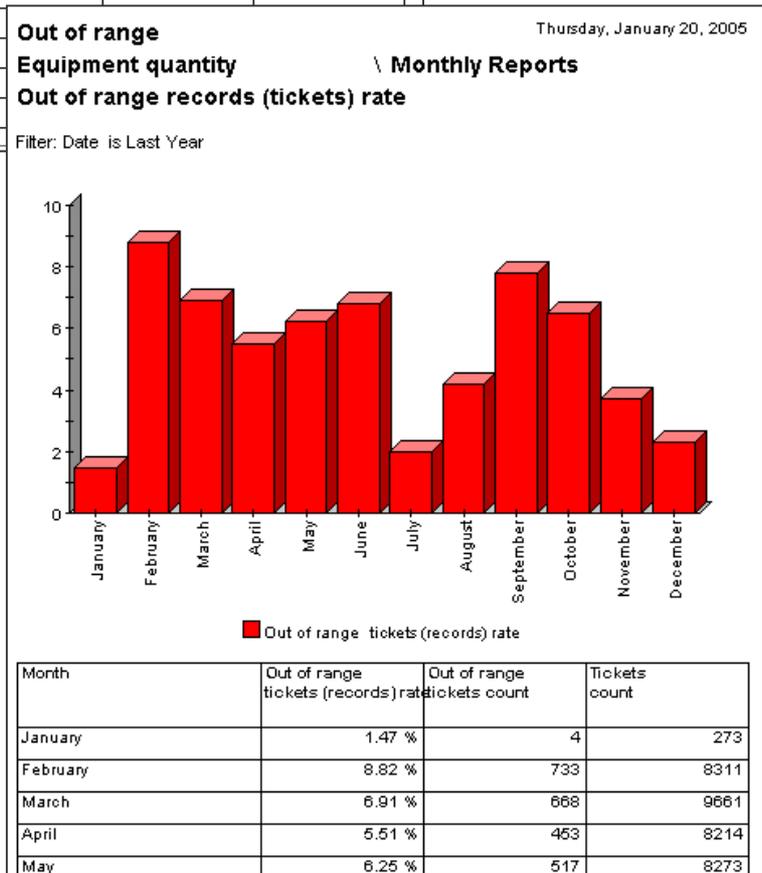
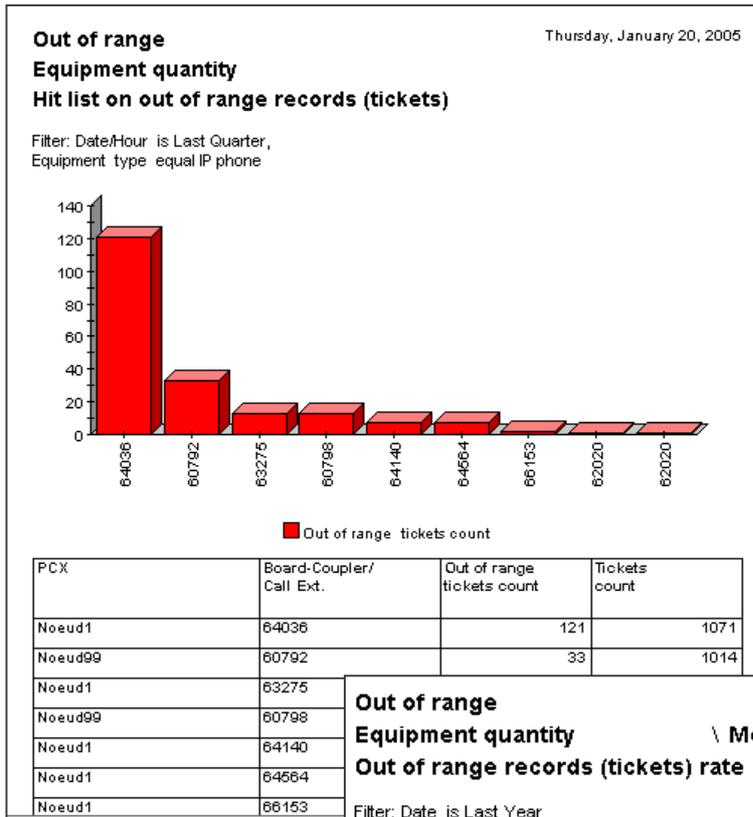
Quality of the communications between two IP segments, synthesis:

Out of range Thursday, January 20, 2005
IP Addresses
Summary Report

Filter: Date/Hour is Last Quarter

Tickets count	759	Out of range tickets count	14	1.84 %	
Out of range delays count	0	0 %	Out of range BFI rate count	2	14.29 %
Out of range packet loss rate count	10	71.43 %	Out of range BFI burst count	4	28.57 %

Hit list of the equipments which generated most out of range CDRs, and evolution of the quality of the communications on equipments during a year:



To complement these predefined reports, the administrators can customize their own reports, for traffic analysis or out-of-range reports on specific equipment or IP addresses, with their own layout.

10. REPORTER TOOL

The Reporter application includes powerful tools to **create, modify and delete reports** and **report definitions**.

The Reporter is used for the Accounting, Performance and Alarms applications.

Predefined report definitions (e.g. Accounting: Detailed report per extension) are delivered within the OmniVista 4760.

Customized report definitions can be made from predefined ones (e.g., Detailed report per extension for the Commercial Department on calls > 100 \$) or created from scratch.

Reports can be generated using report definitions, and then exported in different formats: Excel, pdf, txt, html, or sent by e-mail.

The report generation, export and notification by mail can be scheduled automatically by OmniVista 4760.

Dynamic filters can be defined in a report definition to limit the scope when generating reports (for a specific period, for a specific node in the network, etc.).

10.1. PREDEFINED REPORT DEFINITIONS

OmniVista 4760 comes with a set of ready to use report definitions. These report definitions meet most needs: controlling and assigning costs, analyzing service quality, re-billing, telephone costs control panel, usage monitoring, etc.

See Accounting, Performance and Alarms sections for the list of the predefined reports.

10.2. CUSTOMIZED REPORT DEFINITIONS

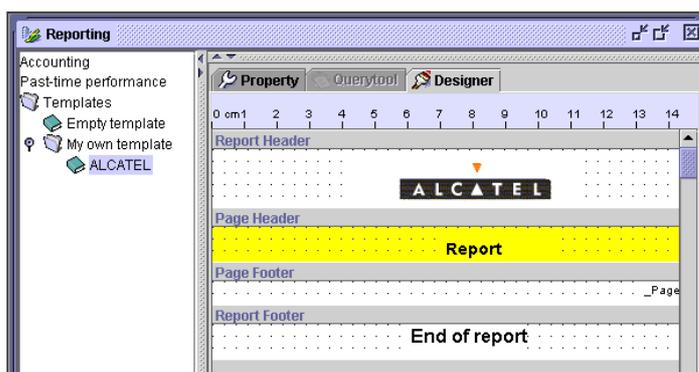
Customized report definitions can be created from scratch or out of existing report definitions in order to fulfil specific needs or to adapt the presentation. This allows specification of the information to be presented: the sort and selection criteria, headers and other data.

This customization can be performed through OmniVista 4760 Query and Design tools.

The **Designer tool** is used to create customized templates, including non-changing information, such as headers and footers, fonts and font sizes, background colors, page breaks, grid size, etc.

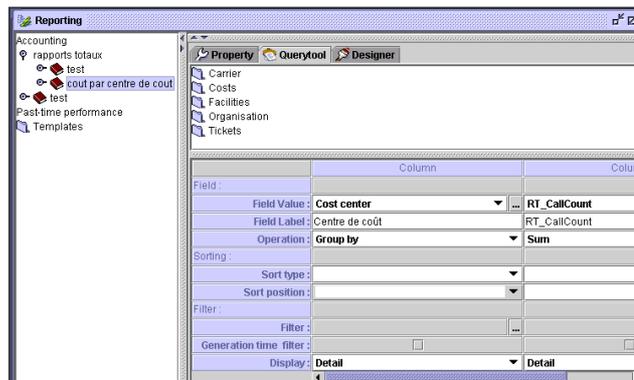
The Designer is a powerful tool to customize predefined report definitions with the company's logo and fonts, for example.

Example of template created through the Designer:



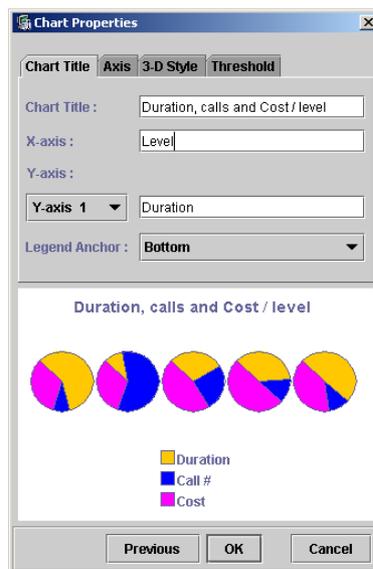
In the same way, the **Query tool** allows definition of dynamic information to be displayed, titles of each column, filtering and sorting criteria, operations (total, average, etc.).

Example of report definition with Cost Centers costs created by the Query tool:



10.3. GRAPHICAL REPORTS

In addition to the table format, the reporting application can display graphs like bar charts and pie charts, created through the Designer. Customization of the title, axis name, 3-D style, etc. Several graphs may be displayed in the same report.



10.4. EXPORT FORMAT

Reports may be exported to the following file formats:

- **TXT:** The exported report is displayed as a table in a text file. Formulas and charts do not appear.
- **PDF:** The report is exported to a PDF file. The exported report may be viewed using any standard PDF viewer. The exported report graphically matches the one that appears on the screen, without the vertical navigation tree.
- **HTML:** The report is exported to an HTML file. Graphic items, such as a pie chart, are saved separately as PNG files. The exported report may be viewed using any standard HTML browser. The exported report graphically matches the one that appears on the screen, without the vertical navigation tree.
- **XLS:** The report is exported to an Excel file. The exported report may be viewed using Excel. The data are inserted in a table in an Excel spreadsheet, matching the one that appears on the screen, without the vertical navigation tree and the graphs.

11. VOICE/DATA CONVERGENCE

11.1. INTEGRATION INTO ENTERPRISE GLOBAL MANAGEMENT PLATFORMS

Management of e-business platforms can be integrated with enterprise global network management platforms like Unicenter TNG® from Computer Associates, OpenView Network Node Manager® from Hewlett-Packard, Tivoli® from IBM, etc. using standard protocol SNMP. They provide network device and fault management solutions. Those Network Management Platforms are sometimes called Hypervisors.

The integration of the Alcatel OmniPCX and OmniVista solutions with standard Network Management Platforms provides a solution to manage Voice and Data converged Enterprise Network. This is particularly suitable for a network consisting of elements from many different providers.

These solutions are provided through the Alcatel Professional Services.

11.1.1. CA Unicenter TNG® integration

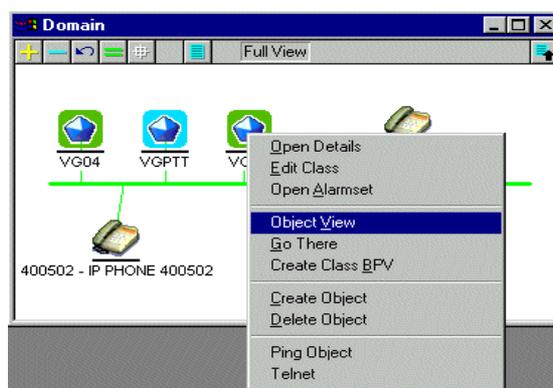
From OmniVista 4760 2.1, OmniPCX 4400 4.2 and OmniPCX Enterprise 5.0, the integration with Unicenter TNG® R2.4 and R3.0 from Computer Associates is available.

Computer Associates benefits from a full unified management solution.

This integration allows two main features:

- **Control of the global network**

This is a standard joint offer from Computer Associates and Alcatel. Customers use a standard Unicenter network management platform with only customisations through usual NM Platform capability. Control of the global network is provided through an overview of the network (Topology Map). OmniPCX 4400/Enterprise and OmniVista 4760 are automatically discovered by Unicenter and visualised on Unicenter topology views. They are animated according to their status (Icon color changing):



OmniVista 4760 and OmniPCX 4400/Enterprise SNMP Traps send the alarms to Unicenter. Alarms are displayed in the associated Unicenter Event Manager:

Time	Node	User	Station	Message
00:00:02	cmv162.col.bsf.alcatel.fr	COL000030734B\cauraint		A:4400 trap: 628 Major Quality of service alarm Unknown 628 NodeRcmv162 AFE_STBY_AFE_2
00:00:02	cmv162.col.bsf.alcatel.fr	COL000030734B\cauraint		A:4400 trap: 628 Major Quality of service alarm Unknown 628 NodeRcmv162 AFE_STBY_AFE_2
01:16:10	cmv162.col.bsf.alcatel.fr	COL000030734B\cauraint		A:4400 trap: 2598 Minor Quality of service alarm Communications Subsystem Failure 2598 NodeRcmv162: C
16:36:07	cmv162.col.bsf.alcatel.fr	COL000030734B\cauraint		A:4400 trap: 2599 Clear Quality of service alarm Communications Subsystem Failure 2599 NodeRcmv162: C
16:36:20	cmv162.col.bsf.alcatel.fr	COL000030734B\cauraint		A:4400 trap: 1527 Warning Quality of service alarm Unknown 1527 NodeRcmv162 Cmde tool interompe pi
16:36:43	cmv162.col.bsf.alcatel.fr	COL000030734B\cauraint		A:4400 trap: 2843 Critical Environmental alarm Communications Subsystem Failure 2843 NodeRcmv162: C
16:36:51	cmv162.col.bsf.alcatel.fr	COL000030734B\cauraint		A:4400 trap: 2844 Clear Environmental alarm Communications Subsystem Failure 2844 NodeRcmv162: C
16:36:54	cmv162.col.bsf.alcatel.fr	COL000030734B\cauraint		A:4400 trap: 1527 Warning Quality of service alarm Unknown 1527 NodeRcmv162 Cmde tool interompe pi
16:37:00	cmv162.col.bsf.alcatel.fr	COL000030734B\cauraint		A:4400 trap: 1527 Warning Quality of service alarm Unknown 1527 NodeRcmv162 Cmde ksh interompe pi

- **Easy access to OmniVista:**

This is to allow in-depth alarm analysis and configuration of an Alcatel network element. OmniVista 4760 Client is launched by clicking on OmniVista 4760 icon in Unicenter topology map.

11.1.2. IBM Tivoli® and HP Open View NNM® integrations

The integrations with IBM Tivoli® (from version 7.x) and HP OpenView NNM® (from version 6.4) using OmniVista 4760 3.0, OmniPCX 4400 4.2 or OmniPCX Enterprise 5.0, is available.

This integration demonstrates a partnership with IBM and HP that allows many advantages from a unified management solution.

11.1.3. OmniVista 4760 R2.1 SNMP Proxy

In addition, the OmniVista 4760 2.1 SNMP proxy converts OmniPCX alarms in SNMP traps.

It provides full integration with enterprise global management platforms for remote PCX (via ISDN/PSTN) or PCX with no SNMP trap sending (OmniPCX Office, OmniPCX 4400 < 4.2).

