



Least Cost Routing

Unified Messaging

*Enabling* Technology for  
Telecommunication Services

Short Code Dialing

Advice of Charge

Caller Identification

Virtual Private Network

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## How to **increase margins** in the competitive **telecom market**

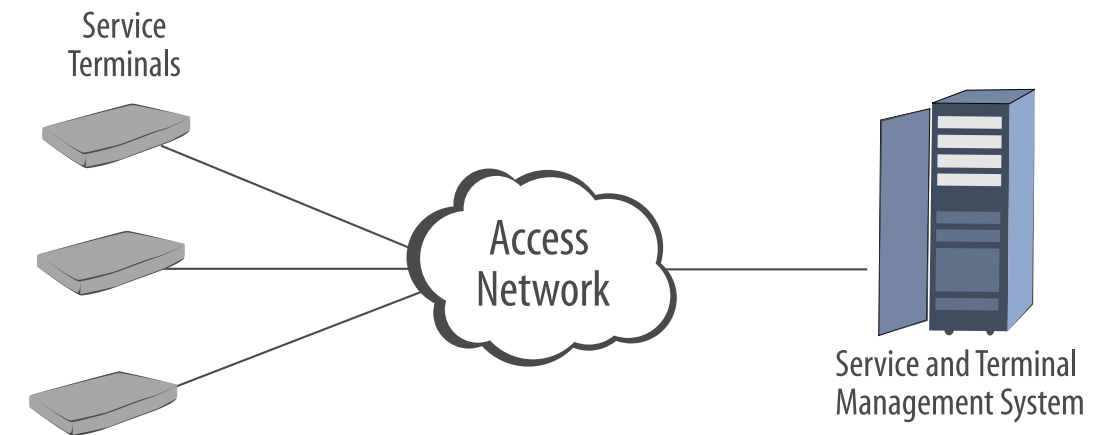
### From call routing to value-adding services

Global deregulation of telecom markets has unleashed competition and opened up the market for alternative operators and service providers. During deregulation, subscribers are attracted by lower call prices, and alternative operators earn revenues from indirect access and Least Cost Routing services. As the market matures, margins on basic telephony services shrink fast. In such a competitive and changing environment, the way to remain at the forefront is to offer new and better services.

### Profiting from services

In the new competitive world, it is essential to update the service offering constantly with new and interesting services. Apart from building increased customer loyalty with an attractive package of communication services, operator revenues will increase in two major ways.

- ▶ **Subscriptions** – When offering services, operators can make revenues grow from the subscription fees for the services offered to end users.
- ▶ **Traffic Increase** – By offering an extensive service package, operators will experience an increase in traffic, enhancing bottom-line revenues.



### Demands for powerful services

Low price is attractive to the end user, but just as fundamental are simplicity, easy access and usability. Operators, on the other hand, wish to provide interesting communication services while having them developed, launched and maintained easily. Thus, as telecom markets evolve, there is an increasingly significant need for intelligent service terminal systems in order to reach subscribers with services.

### Empowering operators

Kreatel empowers operators by supplying enabling technology for telecommunication services. The concept is as simple as it is sophisticated: A service terminal is placed at the end user site, where it creates a bridge to the operator network and the services offered. The functionality of the terminal is determined by software, controlled from a central management system and easily updated to support new services and new situations.

### Products for changing needs

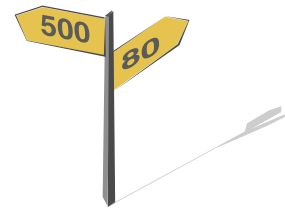
The future in telecommunications will belong to those bringing value to customers at reasonable cost. The flexibility of the Kreatel service terminal systems makes them perfect to accompany an operator or service provider through all stages of market deregulation. Kreatel offers a product portfolio for a vast number of telecommunication services, from alternate network access and Least Cost Routing to advanced messaging services. The products support different access methods and offer different user interfaces.

## Services are the key to revenue streams

The Kreatel service terminal systems enable development and distribution of services that not only offer value-for-money and convenience for end users, but also create revenue for operators. The flexibility allows operators to start with basic services such as Least Cost Routing, and then develop and bundle their service offering as the market matures.

### Least Cost Routing

Advanced and flexible Least Cost Routing for alternative operators and telebrokers is provided by the Kreatel service terminal systems. Whether the purpose is to secure call traffic to a single operator's network or to guarantee the lowest price at all times for all types of calls, they can smoothly handle all situations. All common routing methods are supported: prefix, two-stage dialing and callback.



All available operators and price lists are registered and modified in the management system database. From there an optimized routing table with day and time-based routing decisions is automatically created. Each time a service terminal calls home, it is updated with the most recent information, resulting in exact routing behavior and minimized traffic leakage.

Compared with pre-selection, the Kreatel service terminal systems have greater flexibility. The operator owns the customer to a larger extent since the service terminal directs all calls as the operator has defined. There is no restriction in the choice of whether to route all calls or to concentrate on those generating most profit for the operator. Neither are end users aware of potential capacity problems, since fallback is provided.



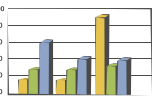
### Unified Messaging

Being able to offer unified messaging services that let subscribers access all forms of messages, however they are sent, from a single terminal is a true "killer application". Unified messaging offers real value and convenience to end users as well as generating subscriptions and traffic income to operators.

- ▶ **Voicemail** – Indication of a new message, the time it was received and its sender give end users a graphical interface to the network-based voice mailbox. By just pressing a button, users can listen to the message or call back the sender.
- ▶ **E-mail** – As a new e-mail is received, end users can view the sender, subject, and part of the content quickly, without having to start up a desktop computer.
- ▶ **SMS** – Via the display, subscribers are able to receive, read and send short messages.

### Reporting of Statistics

Statistics of subscriber calling behavior help operators respond quickly to subscriber needs and to identify profitable business. Most types of statistics can be gathered during service terminal operation: number of outgoing, answered or missed calls, call time and number of fallbacks to the former PTT—all can be viewed in charts and tables. To show subscribers their personal statistics is also an excellent customer service. Call minutes per destination number for residential markets or control of special lines for professional markets are examples of statistics services that add value and increase customer loyalty.



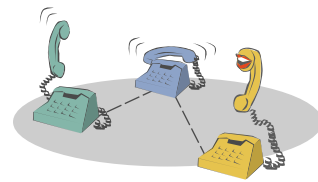
### Short Code Dialing

Short codes can be translated into actual telephone numbers, presenting an opportunity for the operator to offer attractive services that can be reached through simple codes, e.g. select services. Other possibilities are to direct number inquiry calls to the operator's own service center or to offer the service as a subscription, allowing subscribers to define a number of short codes for frequently called numbers.



### Advanced Call Diversion

Operators can offer advanced call diversion and collect both subscription fees and the additional call traffic that each diverted call generates. Residential markets and small offices without an advanced PBX can be offered automatic time-based call diversion after office hours to a voice mailbox or a call center. It is also possible to forward incoming calls to the cellular phone when the ordinary line is connected to the Internet. Combined with short code dialing, the call diversion service is very convenient. Recurrent events, such as lunch, one-hour meetings, etc., can be defined with a short easy-to-remember number, which orders call diversion in an instant.



### Call Blocking

Operators can earn extra subscription revenues by offering subscribers blocking of outgoing and incoming calls depending on destination, time of day and date. For the professional market, call blocking can be used to allow only international calls for some lines and during office hours. For the residential market, entertainment services can be set to require a PIN code and malicious callers can be disconnected as they call in.



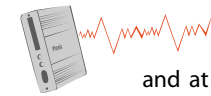
### Hot Calls

For emergencies or other situations when only a single number is relevant, the hot call service is excellent. The user simply has to lift the receiver to be connected automatically to the destination, immediately or after an optional period of time. The hot call service is particularly interesting for the elderly or children home alone. Yet another market segment is small offices that are automatically connected to a service center if no number is dialed.



### Advice of Charge

Providing meter pulses for call cost determination has long been reserved for the PTT. With the Kretel service terminal systems, it is possible to send pulses for an alternative operator as well. For total freedom to decide at what interval and at what cost meter pulses should be sent, the advice of charge tariffs are completely independent of the actual routing decision. Another possibility for advice of charge is to show the actual call cost in a service terminal display. Knowing how cheap it is or how much they have saved by using an alternative operator, end users will be encouraged to call more.



### Caller Identification

Presenting Calling Line Identification (CLI) on a service terminal display generates many useful and valuable services at the end user site. Call registers of outgoing, incoming and missed calls give end users a sense of control over their personal calling behavior. Missed calls also generate more call traffic, as end users tend to call back. Caller identification can be combined with an on-display telephone book to present incoming calls with caller name instead of only the number. It also facilitates outgoing calls as end users always have names and numbers available.



### Virtual Private Network (VPN)

For small offices, an operator can use service terminals to simulate a PBX or Centrex solution. Office personnel can then dial short codes for different extensions, within or between offices. Special VPN tariffs can also be offered by letting the service terminal send a billing code, indicating to the operator switch that the call is within the VPN. By combining VPN with other value-adding services, such as a phonebook visible in a display, operators have a powerful communication offering for small offices.



### Pre-paid Subscriptions

For financially insecure markets or for operators wishing to rationalize expensive billing procedures, the Kretel service terminals can function as pre-paid cards. The service terminal automatically identifies the subscriber to the operator switch and all calls are charged to a non-credit account to which the subscriber pays in advance. If the terminal is equipped with a display, subscribers can have visual control of the account balance. Selling a service terminal along with a pre-paid subscription is a way for operators to finance the product investment, while at the same time building customer loyalty and securing call traffic.





### Enhancing Select Services

Several of the European PTTs offer a range of select services in the public telephone network, e.g. Ring Back at busy tone, Reminder Call, etc. These services increase call traffic, add value to the subscriber and generate income for the operator providing them. A service terminal at the end user site radically improves the usability and user frequency of these services by making them visually available in a display menu, thus eliminating the need for subscribers to remember complicated codes. In addition, the flexible architecture of the service terminal systems leaves all possibilities open for the future. New select services can be introduced in the system and presented to subscribers with minimum effort.

### Information Services

Having a display at the end user site whose content is controlled by the operator offers new possibilities for distributing information. The operator can push information such as third party commercials during ongoing calls, special offerings to selected customers or promotion of new services. The messages displayed are easily introduced from the management system and can be changed at optional time



intervals. This feature can also be used for letting end users pull centrally stored information, e.g. subscribe to personalized information services, such as local weather reports, stock quotes, etc.

### Web Interface

As services increase in number and become more sophisticated, it is important to make them available to users and easy to administer for operators. A graphical web interface where users order services and modify settings not only increases the interest for the services but it also generates valuable traffic to the operator's web site, thus exposing subscribers to other offerings, commercials, etc. Subscribers can see call statistics, enter a Hot Call phone number or define short codes for selected phone numbers, etc.—tasks carried out by the subscribers that reduce administration for the operator and give nice customer support as users experience the immediate response to their actions.



|                               | Professional Markets |            |             | Residential Markets and SOHO |        |
|-------------------------------|----------------------|------------|-------------|------------------------------|--------|
|                               | Phonix               | Phonix AOC | Phonix ISDN | Dialix                       | Matrix |
| Least Cost Routing            | X                    | X          | X           | X                            | X      |
| Unified Messaging             |                      |            |             |                              | X      |
| Voicemail                     | X                    | X          | X           | X                            | X      |
| Voicemail with user interface |                      |            |             |                              | X      |
| E-mail                        |                      |            |             |                              | X      |
| SMS                           |                      |            |             |                              | X      |
| Reporting of Statistics       | X                    | X          | X           | X                            | X      |
| Short Code Dialing            | X                    | X          | X           | X                            | X      |
| Advanced Call Diversion       | X                    | X          | X           | X                            | X      |
| Call Blocking                 | X                    | X          | X           | X                            | X      |
| Hot Calls                     | X                    | X          | X           | X                            | X      |
| Advice of Charge              |                      | X          |             |                              | X      |
| Caller Identification         |                      |            |             |                              | X      |
| Virtual Private Network       | X                    | X          | X           |                              | X      |
| Pre-paid Subscriptions        | X                    | X          | X           | X                            | X      |
| Enhancing Select Services     |                      |            |             |                              | X      |
| Information Services          |                      |            |             |                              | X      |
| Web Interface                 | X                    | X          | X           | X                            | X      |
| Future Services               | X                    | X          | X           | X                            | X      |

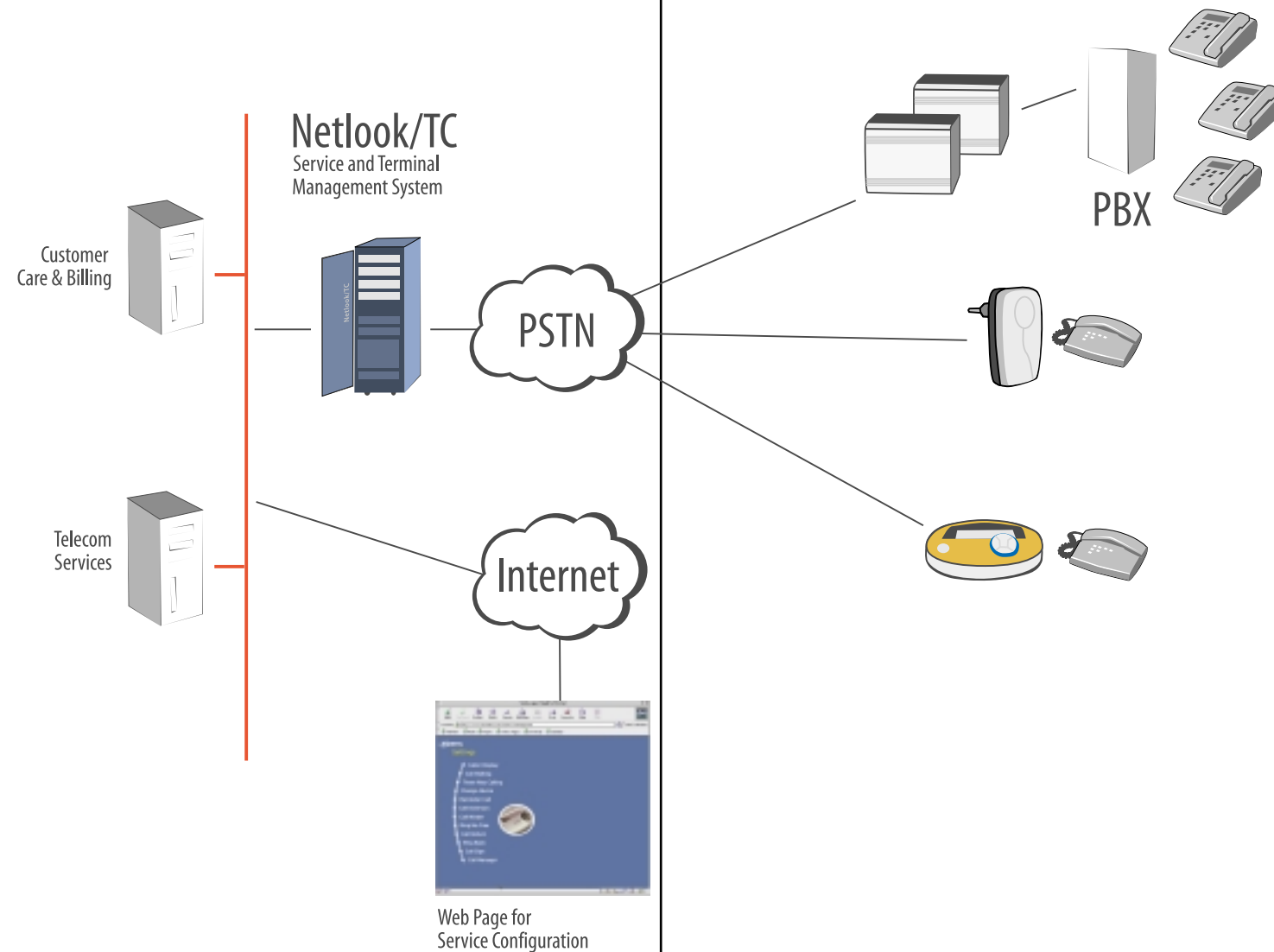
## Flexible service terminal systems

### Distributed systems

The Kreatel service terminal technology is built as a distributed system. Intelligent terminals are placed at the end user site, and they communicate with a centrally placed management system to download correct applications as well as to report data gathered during operation. The terminals and the management system exist in perfect symbiosis—together they provide a powerful tool for operators and service providers in their struggle for service excellence.

### Netlook/TC – the heart and the brain

The veritable heart of the solution is the management system, Netlook/TC, which administers and controls all installed terminals. From here, new services are developed, implemented and distributed to all relevant units. Netlook/TC is an efficient tool for pure Least Cost Routing services but offers at the same time vast possibilities for extensive value-adding services and subscriber-specific applications. It provides absolute flexibility to the whole system and to the separate terminals, an essential quality for a rapidly changing environment.



### Extensive product portfolio

Kreatel holds an extensive product portfolio to fulfill different needs of the telecom market. Netlook/TC is the single point of management that supports all service terminals simultaneously, and allows the operator to grow within the system. New markets can be entered simply by adding new services or new terminals.

► **Phonix** comes in several variants and is specifically designed for professional PBX installations. Every terminal is chainable up to 16 lines to match exact line requirements, all of which are updated simultaneously.

► **Dialix** is intended for the residential and small offices markets, thus focusing on the need for cost-effective and hassle-free workflow handling.

► **Matrix** is a truly general platform for advanced, interactive telecom services. Via a display and a number of keys, users have access to a variety of telecom services.

## For professional markets

### Phonix

In any analog PBX, the Phonix service terminal helps operators and service providers in their struggle for satisfied and profitable business customers. The main application is to provide advanced true Least Cost Routing and secure traffic without leakage, but the vast service potential introduces new possibilities for operators to attract and retain customers. Phonix comes in two versions: single line and four-line.

### Phonix AOC

By providing charging information, the Phonix AOC service terminal helps operators and service providers to compete in markets where former PTT meter services are used for call cost determination, such as at hotels, hospitals and call shops. The advice of charge application can be combined with attractive service offerings. Two versions are available: single line and four-line.

### Phonix ISDN

In any digital PBX, the Phonix ISDN service terminal ensures network availability and secure connections as well as enables high-quality services from true Least Cost Routing to advanced network services. Developed for Basic Rate Access, Phonix ISDN operates with minimized network interference and end user disturbance. Phonix ISDN comes in two versions: single and double Basic Rate Access.



## For residential markets and small business

### Dialix

The Dialix service terminal provides a reliable and cost-effective means of securing traffic without leakage or advanced true Least Cost Routing with no restrictions. Its design and plug-and-play installation make Dialix a perfect product for the residential market and for small offices. Operators and service providers can also supply subscribers with a broad range of telecommunication services that Dialix handles perfectly and transparently.

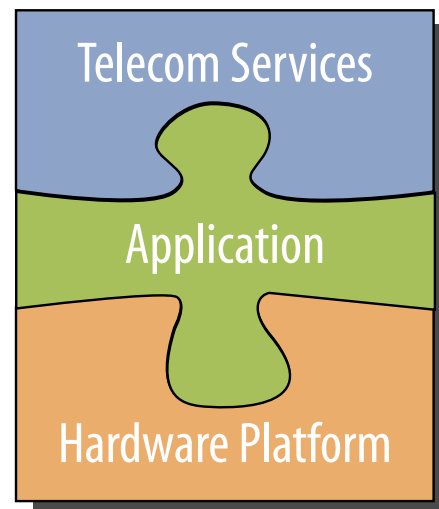
### Matrix

Equipped with a dimension of visual interaction, Matrix facilitates the complex choice of services provided by different networks and suppliers in maturing deregulated markets. It offers unique possibilities for developing and bundling telecom services. For the first time, Matrix allows aggregation of services that used to require several different products. The main application for Matrix is to be a messaging central, but this powerful platform enables the operator to develop and bundle telecom services to an extent only limited by the imagination.



## Software-driven technology

The service terminals are actually small computers. With the vast majority of their features built in software, the whole system is easily updated and adapted to changes. On site, the terminals operate according to their multi-service applications, whether it is to add a prefix to a dialed number, provide true Least Cost Routing or display the latest e-mail. The application controls the behavior and enables different telecom services. The application consists of parameter settings and code written in a high-level language and is easily updated remotely. Totally new behavior is possible simply by changing applications. No matter what demands arise in the future—a new application can be developed in-house or by a third party to provide customized services to a distant terminal.



### Integration with external systems

As services become more advanced, integration with external systems such as voicemail servers, web servers, SMS and e-mail servers, etc., is crucial. Netlook/TC is easily integrated with external systems by supporting plug-ins that handle communication between systems. This gives the system a wide range of possibilities and makes it future-proof.

### Open Interface

Netlook/TC is an open system, and via the Netlook Open Interface (NOI) the operator or any third party can create new features and services for implementation in end user terminals. Netlook Open Interface is a standardized interface for reading and writing in the database, as well as for performing a broad range of operations. As new versions of Netlook/TC are released, NOI remains the same, giving system managers control over system functionality and the ability to adjust the system perfectly for their specific needs.

