



Business Continuity Manager System Description



BCM^{LITE}

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1. Introduction

Why does a company need to consider the adoption of a disaster recovery and/or business continuity solution for their telecommunications infrastructure?

To answer this question you need to ask yourself another question.

How long would your business survive without access to a working telephone system?

The requirement for a comprehensive disaster recovery and/or business continuity plan for a company's IT infrastructure and IT systems has been accepted as good business practice for a number of years. Most, if not all, companies that rely on computer technology have implemented a Disaster Recovery Plan in one form or another.

The same cannot be said for a company's telephone network!

This is perhaps surprising given the increasing reliance on global communications and the consequent demands being placed on individual telephone systems for the transfer of data via Wide Area Networks, access to the Internet, e-mail, e-commerce and video conferencing. And let's not forget conventional voice and fax communication including the delivery of Direct Dial In (DDI) functionality.

Communicate, communicate, communicate: that is the key to effective Business Continuity Management. In an era where the transfer of information around the world takes only seconds, waiting hours to re-establish your telecommunication links will place the reputation of your company under serious threat. Remember....nothing happens in business until the phone rings!

Historically, disaster recovery solutions for telephone systems have been based upon 'Recovery Vehicles' (operated by companies such as BT CommSure, Ericsson, Mitel etc.) providing a replacement switchboard (PBX) - or a full ACD (Automated Call Distribution) "switch" if operating within a call centre environment - within a contracted period, normally within 12 -24 hours of an invocation - a "disaster" being declared. A further period will also be required if the existing PBX's or ACD's distribution wiring has also been affected or the selected 'Recovery Site' needs to be cabled to receive the replacement system.

Alternative solutions are available through the introduction of "Fixed Recovery" or "Hot Sites". These facilities contain conventional PBXs or ACD switches that can be specifically programmed or fitted with 'Flash Cards' to (ideally) replicate the customer's switch that is no longer available as a result of the 'Disaster'. Whilst, in theory, constituting a more effective solution than contracting for the (shared) use of a "recovery vehicle" a successful transfer to the replacement switch relies upon the availability of a switch programming engineer or the regular updating of 'Flash Card' configurations to reflect the constant changes to the configuration of the Customers existing switch which is in every day use. In practice, it is inevitable that the 'back-up' switch programming will require a certain amount of 'adjustment' (re-programming) - which, again, delays an effective return to the handling of the customer's incoming calls.

Whilst the principle of contractually securing access to a 'Fixed Recovery Site' might appear to constitute a viable Business Continuity solution, in that it provides a readily available alternative *location* from which to work, in reality, migration to such a facility presents many additional problems and/or considerations that need to be addressed prior to the re-establishment of 'Business as Usual'. The more significant issues can be summarized as:

- a) Whilst the number of available 'Fixed Recovery Sites' within the UK is increasing, availability of such facilities remain limited, as they are invariably located in and around the major conurbations. Consequently, re-location to your contracted 'Fixed Recovery Site' may well require significant additional travelling by your workforce – which needs organizing at extremely short notice.
- b) This additional travelling can create problems for the workforce, who may, for example, be on flexi-time in order to pick up/care for their children after school and are therefore effectively precluded, (or may choose to preclude themselves) from re-locating to the alternative site.
- c) It is simply uneconomical to even consider re-locating 100% of a company's workforce to an alternative 'Fixed Recovery Site' – effectively duplicating most, if not all, of a company's office overheads. In reality, many companies choose to relocate their 'mission critical' personnel – amounting to anywhere between 20-35% (up to 80% in the case of major financial institutions and the like) of the workforce, to the Fixed Recovery facility. Of course this poses two fundamental questions:
 - Where does the rest of the workforce go to carry on working?
 - How do a company's customers continue to communicate with the disrupted company's staff in a seamless and efficient manner?

Given these shortcomings, GemaTech decided that there had to be a better way.

In order to address this issue, GemaTech has undertaken a comprehensive review as to what really is required when a "disaster" strikes, ranging from the 'digger' cutting through the telephone cable serving a particular premises or the evacuation of your building following a simple gas leak, to the more serious disruptions caused by fire, flooding, explosions. Also considered were the adverse affects caused by "man made disasters" i.e. disruption caused by the fireman's strike, rail strikes, petrol shortages, traffic jams, atrocious weather conditions etc. etc. Most major incidents affect peoples' ability to gain access to their office telephones. Therefore a credible business continuity solution for any telecommunications system (voice and data) requires a flexible method of re-routing 100% of all incoming calls on an individual (DDI) and/or group 'service' basis to 100% of the workforce wherever they may be (re)located quickly, seamlessly, efficiently – and cost effectively.

GemaTech have addressed this problem by developing two unique products, BCM and BCM^{LITE} which have been specifically designed to enable any company, large or small, to instantaneously re-route 100% of their incoming telephone calls to any number of alternative locations in a simple to use, flexible and cost effective manner.

2. Understanding what the Carriers do

Understanding what the Carriers (BT, C&W, etc) *will* do – and, more importantly what they choose *not* to do. Explaining the difference between geographic and non-geographic numbers.

2.1 Geographical Numbers (020 7, 0121, 0161 etc.)

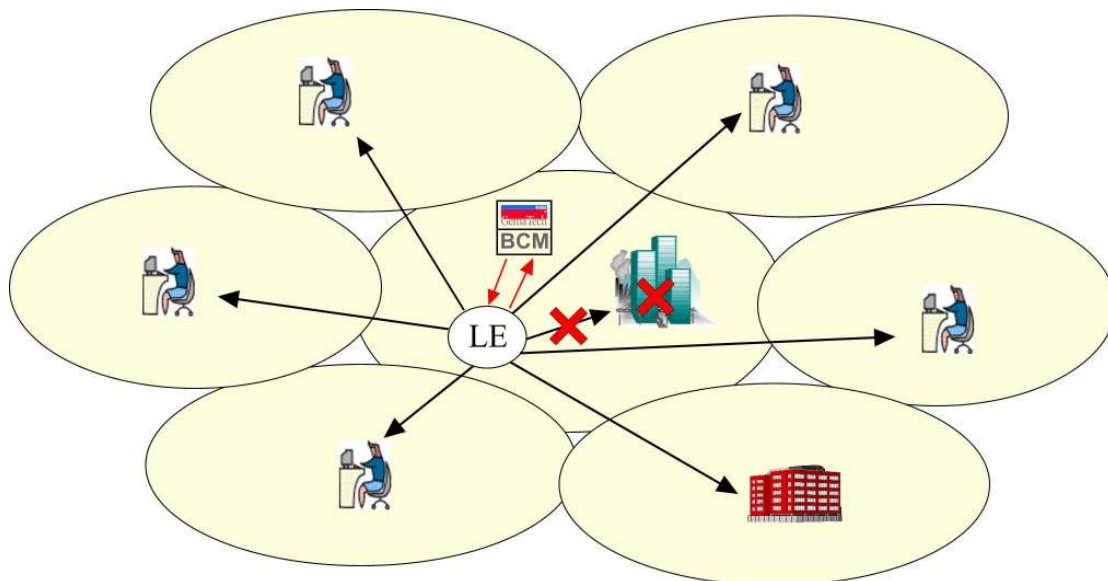
Whilst most modern digital central exchange switches (operated by BT, C&W, etc.) can, in principle, be programmed to route individual telephone numbers to alternative locations in the event of a disaster, in practice, their management systems make this an extremely cumbersome, time consuming and difficult operation to both carry out and manage.

Consequently, the carriers will, generally, restrict their “service offering” to the diversion of whole number ranges (including the last three/four digits of the DDI number ranges) to one alternative location *within the same local exchange*.

The problem arises when a client wants to divert a full range of DDIs (including the last three/four digit codes) to a different location, or a number of different locations, outside of the "local" area exchange, OR, in the case of re-routing calls within the local exchange area, wants to redirect the incoming calls to specific DDI/Service numbers to any number of different locations (as is likely in times of disaster). In the latter case the carrier simply chooses not to do it and in the former you simply lose the DDI intelligence in the transfer process - so the phone rings - but who is it for? *Hardly planning for business as usual!*

Given that there are some 5,500 BT exchanges and some 90+ C&W exchanges, together with another 400 ‘other exchanges’ in the UK, and only a total of approx. 45 ‘Hot Sites’ the predominance of transfers will be to locations “out of local exchange area” – hence the total loss of DDI functionality – an aspect that causes many companies, and specifically the financial institutions growing concern and can be illustrated by the under noted diagram.

Use of GemaTech’s BCM and BCM^{LITE} products provides a solution for and ultimately resolves all of these shortcomings.



Given the fact that conventional businesses invariably continue to use geographic DDI numbers supplied by BT, C&W, Colt, MCI, Thus etc. it will be necessary for GemaTech to work within the commercial constraints laid down by these carriers and therefore operate within their respective product offerings/functionality specifications and/or “divert on failure” services.

Consequently, in order to take full advantage of a carrier’s “divert on failure” basic services, achieve the delivery of a truly cost effective business continuity solution, capable of diverting any number of individual DDIs to any number of alternative locations on an individual DDI basis, and totally independently of the local exchange area, the GemaTech equipment must be sited in a secure location within the same exchange area serving the customer’s building(s). The selected location should, preferably, be a minimum of one mile (or such distance as is considered by the customer’s business continuity policy to be appropriate in such circumstances) away from the customer’s building(s) in order to minimise the risk of the building housing GemaTech’s recovery equipment being affected by the same “disaster”.

In the event of an invocation it may well be possible (pending confirmation of the precise configuration of the network) for all of the incoming calls to be *instantaneously* re-routed to the GemaTech equipment and thereafter instantaneously re-directing the incoming calls to your employees who may have re-located (or be in the process of re-locating) to any number of alternative locations, i.e. to mobile phones, homes, alternative offices, or Disaster Recovery “Hot Site(s)”.

Hot Site Recovery

On the assumption that many customers have entered into a contract with a Hot Site provider for access to a “Hot Site” for at least a proportion of their workforce currently housed within their existing offices/buildings if they are unfortunate enough to suffer a “disaster”, it is extremely likely that the “Hot Site” will be outside of the local BT/C&W/Colt/MCI exchange area serving the existing buildings. Accordingly, the relationship of the “Hot Site” to the existing buildings and/or offices can be illustrated by the above noted diagram – with the “Hot Site” being located in the bottom right exchange “bubble” (exchange area) – resulting in the loss of the “1XXX” DDI information when the incumbent carrier transfers the incoming calls to the “Hot Site”, for the reasons explained above.

The net result of the loss of this DDI functionality being that it will be necessary to set-up a number of dedicated reception/switchboard operator(s) to receive/answer all of the incoming calls (previously directed towards DDI numbers) to ascertain who the call is for and then re-direct the call to the correct person at the correct desk within the “Hot Site” – or via a “trunk to trunk” call out to the appropriate person working elsewhere. This whole exercise requires the programming of the PBX within the “Hot Site” (which could take several hours if not days) to recognise the fact that “Joe” is now working on Ext. 106, which is on that particular desk.

Clearly, this exercise is extremely cumbersome and is hardly delivering “business as usual” in possible times of stress – an invocation. This delay/confusion will inevitably cause inconvenience and delay to the caller – which may even result in the loss of existing customers - and at best lets them know that there is something wrong!

It will therefore be appreciated that use of GemaTech’s BCM and BCM^{LITE} products will enhance the re-routing service capability currently available from a possible Hot Site supplier by providing the ability to instantaneously (in certain instances and configurations) re-direct any number (up to 2,048 per BCM^{LITE} unit and up to 30,000 per full BCM unit) of individual DDIs to any number (up to 2,048 per BCM^{LITE} unit and up to 30,000 per full BCM unit) of individual locations (including those desks within any chosen “Hot Site”). With the full BCM product there is the added capability of being able to instantaneously monitor what is happening to all incoming calls and to remotely monitor and manage those calls by making changes to the call routing plan quickly and easily “on the fly” as circumstances dictate.

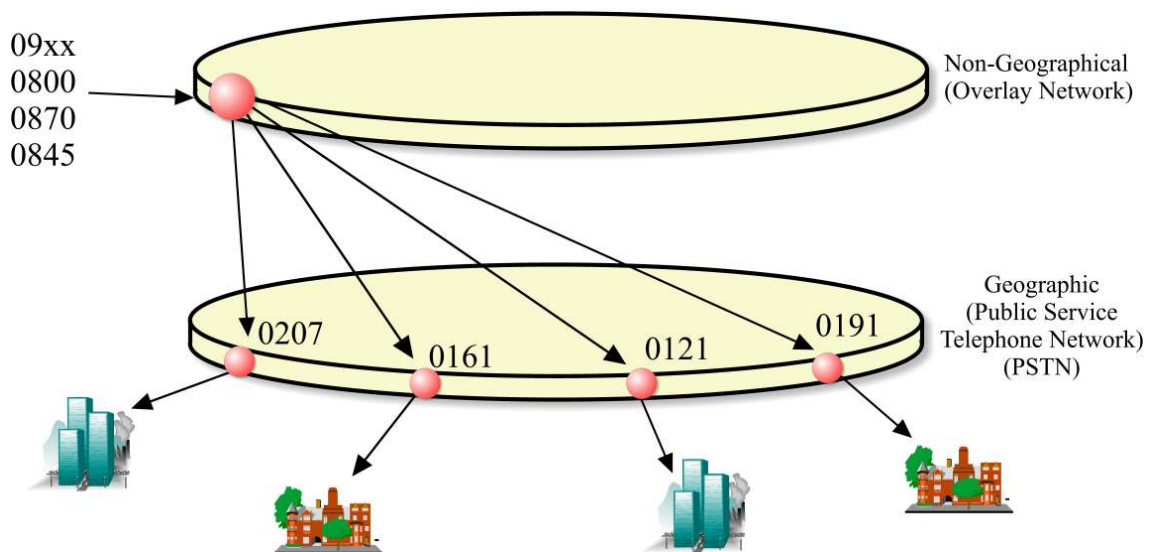
2.2 Non-Geographic Numbers (0800, 0845, 0870 09xxx etc)

The basic principle behind the concept of “location independent” numbers is that carriers can “point” the location independent or “non-geographical” number to any underlying geographical number – regardless of which local exchange actually delivers the number.

Consequently, a function of this separate “Overlay Network” layer is the carrier’s ability to quickly and easily “re-map” specific, individual, location independent numbers to (single) alternative locations. Therefore, in the event of a “disaster” it is currently possible to have all of a client’s non-geo numbers simply and easily re-mapped to a number of alternative locations. For a premium, a client can create any number of call delivery plans for individual “service numbers” (0800, 0870 etc.) and activate these alternative routing plans at will. However, the final delivery of the non-geo numbers is through the access layer using the (geographical - AFN) delivery numbers.

Non-geographical numbers are predominantly used in the call centre industry as it not only provides location independent numbers but also enables the call centre industry to provide either Freephone or selected charge bands for incoming calls.

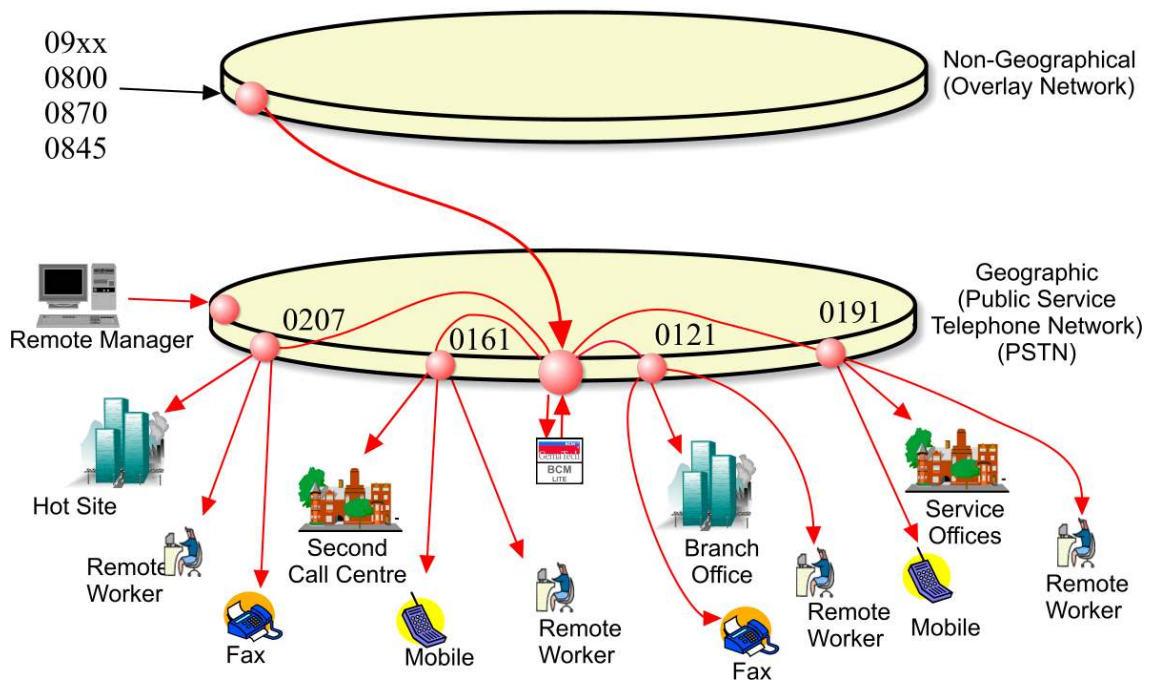
This can be illustrated as under.



Whilst this arrangement can be considered to be a more flexible solution than is currently available from the carriers delivering geographic DDIs, it is still restrictive in that many call centre “Agents” can be working in a number of different “Services” at the same time. The ability to divert individual service numbers to a number of individual locations is fine in principle, however, the actual Agents can only be in one place at any one time. This solution therefore still, effectively, requires the call centre Agents to relocate to a central “Hot Site” should the call centre suffer a “disaster”. This scenario enables call centre Agents to be re-located literally anywhere that has access to a ‘phone, (including working from home) should the call centre suffer a disaster.

It will therefore be appreciated that again, use of GemaTech’s BCM and BCM^{LITE} products will *enhance* the re-routing service capability currently available from a carrier by providing the ability to instantaneously (in certain instances and configurations) re-direct any number (up to 2,048 per BCM^{LITE} unit and up to 30,000 per full BCM unit) of individual DDIs or Service numbers to any number (up to 2,048 per BCM^{LITE} unit and up to 30,000 per full BCM unit) of individual locations (including those desks within any chosen “Hot Site”). With the full BCM product there is the added capability of being able to instantaneously monitor what is happening to all incoming calls and to remotely monitor and manage those calls by making changes to the call routing plan quickly and easily “on the fly” as circumstances dictate.

Therefore, in the event of a customer incurring a “disaster” the customer can, by prior arrangement with the incumbent carrier, arrange to the diversion of their non-geographical numbers to GemaTech’s BCM and BCM^{LITE} **which can be located literally anywhere but preferably within the security of a carrier’s exchange.** This can be illustrated as under



Incoming calls can now be distributed intelligently, (with full ACD skills based routing via the full BCM version) to 100% of a customer’s staff who have re-located to any number of different locations.

3. GemaTech's Business Continuity Solution – A Powerful Flexible Platform

The core technology and development philosophy incorporated in the “GemaTech Technology Engine” (GTE), the foundation for GemaTech's full product range, is truly unique. It is a totally integrated solution comprising bespoke hardware assemblies (PCBs utilising industry standard components) and open architecture proprietary software. GemaTech own 100% of the intellectual property rights (IPR) to all technology used in the family of products developed to date, including all hardware/software designs and copyrights. Consequently, GemaTech does not have to pay royalties/licence fees to any third party supplier and, as a consequence, does not need to refer back to hardware/software suppliers (so often based in an inconvenient time zone) for answers to support questions.

Ownership of the core technology permits GemaTech to quickly and efficiently create new products for proven markets with a fundamentally different approach to that adopted by the competition – a strong competitive edge. All key software modules are held within ‘source code’, which is never released. Customers only have access to ‘object code’. As a totally digital system the GTE based products can handle signals of all types i.e. voice, fax, video, data, email and voice over Internet protocol (VoIP).

This technology allows thousands of calls to be handled simultaneously at a significantly lower cost compared to existing solutions. GemaTech has chosen to adopt existing telecommunications and IT ‘standards’ wherever possible, most notably E1 and T1 interfaces, and Windows 2000.

3.1 GemaTech's BCM Product

The full BCM is a very powerful and sophisticated server based remote ACD (Automatic Call Distribution) system, *including full skills based routing* which can intelligently re-route any number of individual DDIs, or Call Centre service numbers, to any number of alternative locations. It also provides any number of supervisors/managers with the capability of being able to monitor and manage, *live*, what is happening to your incoming calls as the invocation/incident unfolds and, if necessary, make changes to the call plan quickly and easily as circumstances dictate. This very powerful management platform also enables managers to listen in to those incoming calls and possibly make changes to the call plan as a result.

This product is fully described within a separate Product Specification document.

3.2 GemaTech's BCM^{LITE} Product – OPTION I and OPTION II

The basic BCM^{LITE} is targeted at the business community who are simply looking to divert any number of individual DDIs or Call Centre service numbers to any number of individual locations – and is capable of being invoked literally seconds after a communications failure has occurred. Any number of individual call plans can be established in advance using simple Excel spreadsheets with supervisors/managers simply selecting the most appropriate plan and literally “dragging and dropping” the selected plan unto the appropriate BCM^{LITE} icon located on a laptop/remote PC that has a data connection to the BCM^{LITE}.

The development of the BCM^{LITE} product is based upon GemaTech's GTE hardware platform and is designed to operate over ISDN 30 E1 connections either DASS II or I421.

The design philosophy behind the product being that the BCM^{LITE} has the capacity to receive 30 concurrent incoming calls via an ISDN 30 E1 connection, and following the identification of the individual DDI or call centre service number that is being dialled by the caller, to re-direct that individual call to that individual number to one of many alternative numbers at (potentially) many different locations.

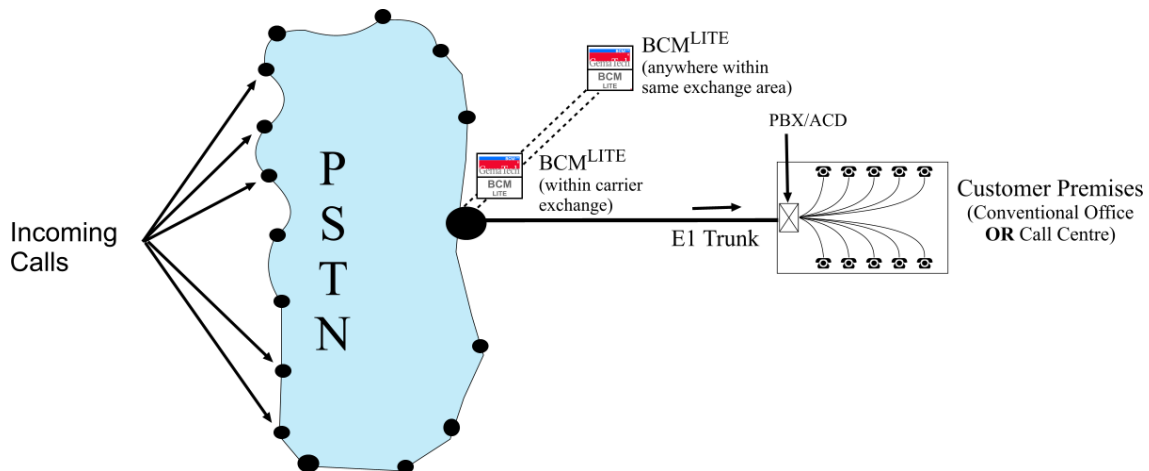
3.2.1 Product Options

BCM^{LITE} OPTION I

The BCM^{LITE} OPTION I has been specifically designed to be installed in any secure location within the same telecoms exchange area that serves the customer's office premises. However, the most secure, and therefore most preferable, location is actually within the carrier's exchange - all as indicated in the under noted diagram.

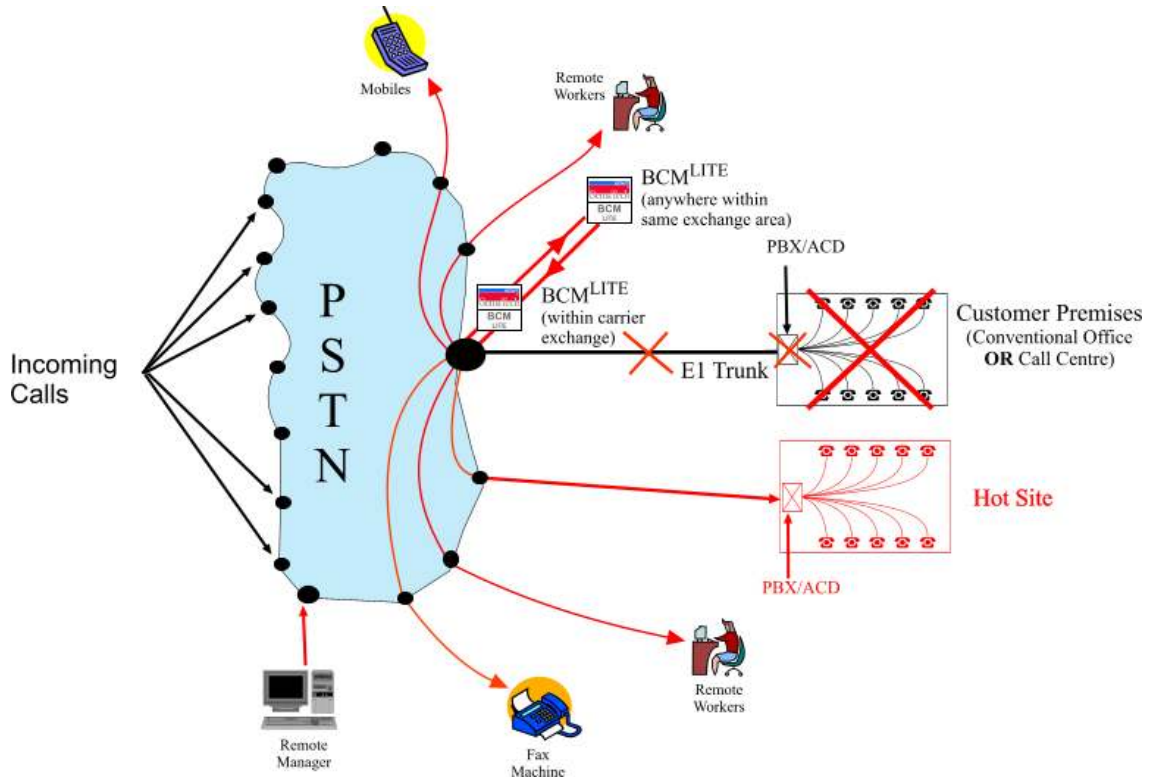
It is connected to the local exchange via 2 ISDN 30 E1 trunks, which should be configured by the supplying carrier to be port 1 incoming only and port 2 outgoing only. Audio and progress tones will be passed through transparently from port 2 to port 1. The BCM^{LITE} unit will redirect calls from port 1 to port 2.

Any number of alternative call routing plans can be quickly and easily established using Microsoft Excel spreadsheets which simply identifies the existing DDI number (or group number) in the left hand column and the alternative destination of the re-routed call in the right hand column – see section 3.2.2.



Should the customer subsequently suffer a "disaster" whereby the network connection to the local exchange fails for any reason, the PBX/ACD fails or the building becomes in-operable i.e. as a result of fire, flood, explosion etc - or it is simply decided to invoke a specific plan because of a localized event i.e. a rail strike, petrol shortage, traffic problems or simply bad weather (snow etc) then all incoming calls to specific DDI's (or call centre numbers) can be instantaneously re-routed to any number of alternative locations - all as per the diagram below.

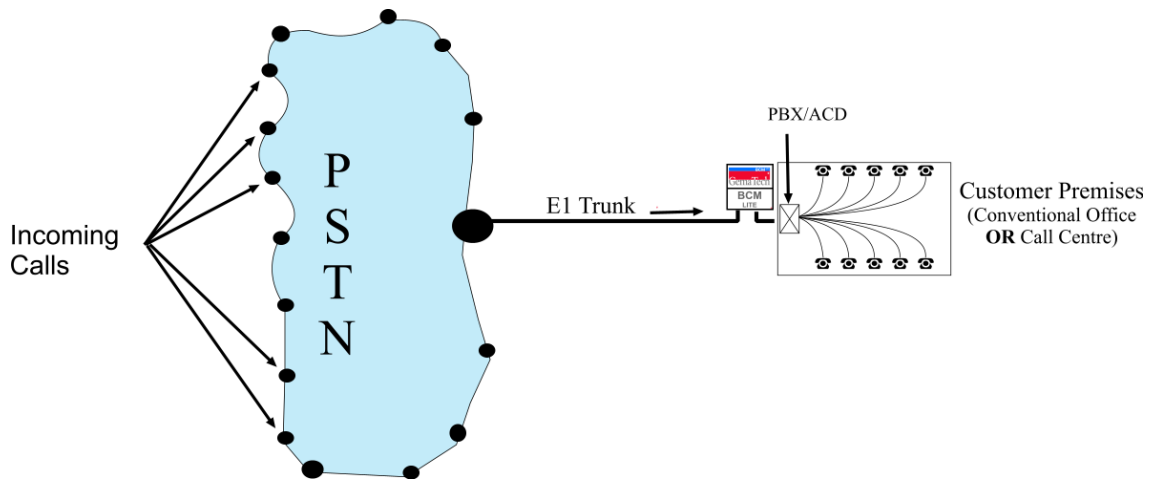
The beauty of this solution is that any number of call plans, previously prepared in Excel spreadsheets, can be available to be the customer's, managers/supervisors such that they can select the most appropriate call plan to best suit the circumstances they are being asked to "recover" from. They also have the added capability of being able to switch between the respective Call Plans and make minor amendments to them as changing circumstances dictate.



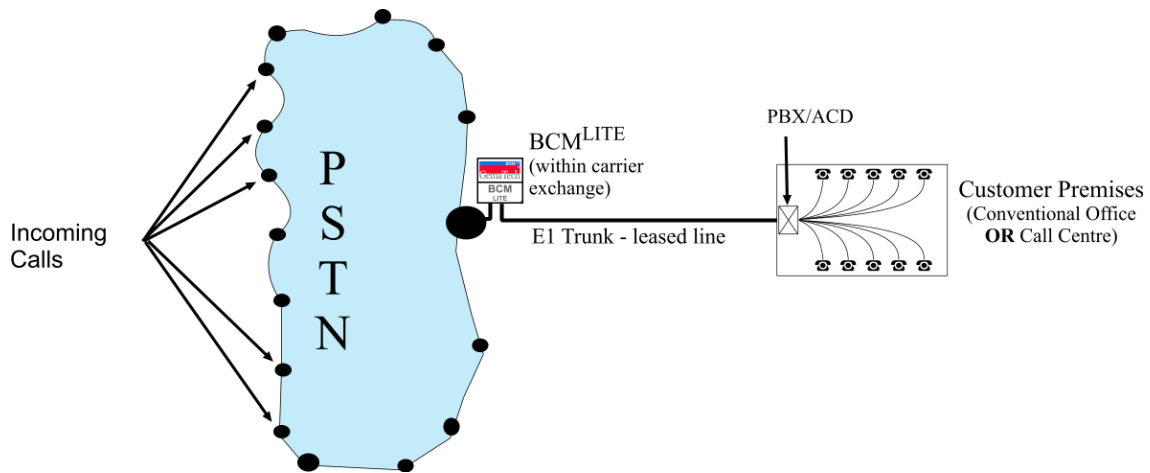
BCM^{LITE} OPTION II

The BCM^{LITE} OPTION II has been specifically designed to be installed "in line" with the E1 trunk(s) connecting the customer's incumbent carriers' exchange to the customers' premises. This provides for all incoming calls being routed through the BCM^{LITE} OPTION II and then passed through to the appropriate DDI number located within the conventional office.

Consequently the BCM^{LITE} OPTION II unit can be located either in the local exchange or within the site boundary of the customers' premises all as indicated in the following diagrams.

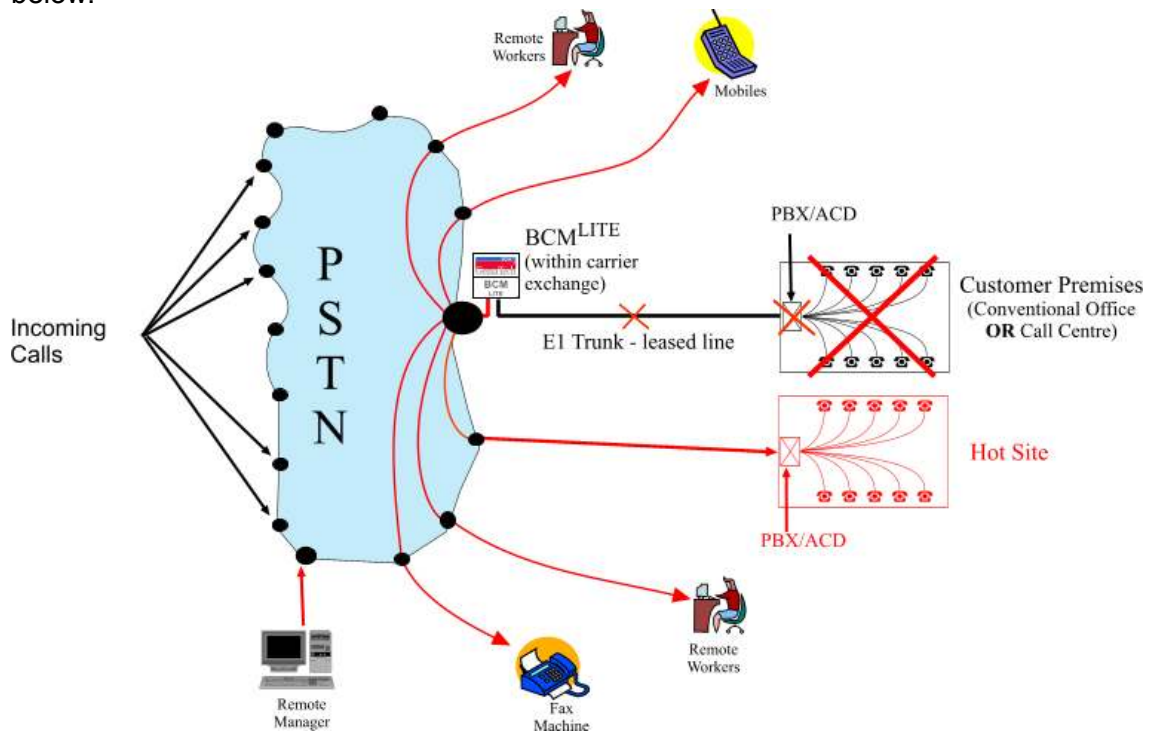


OR

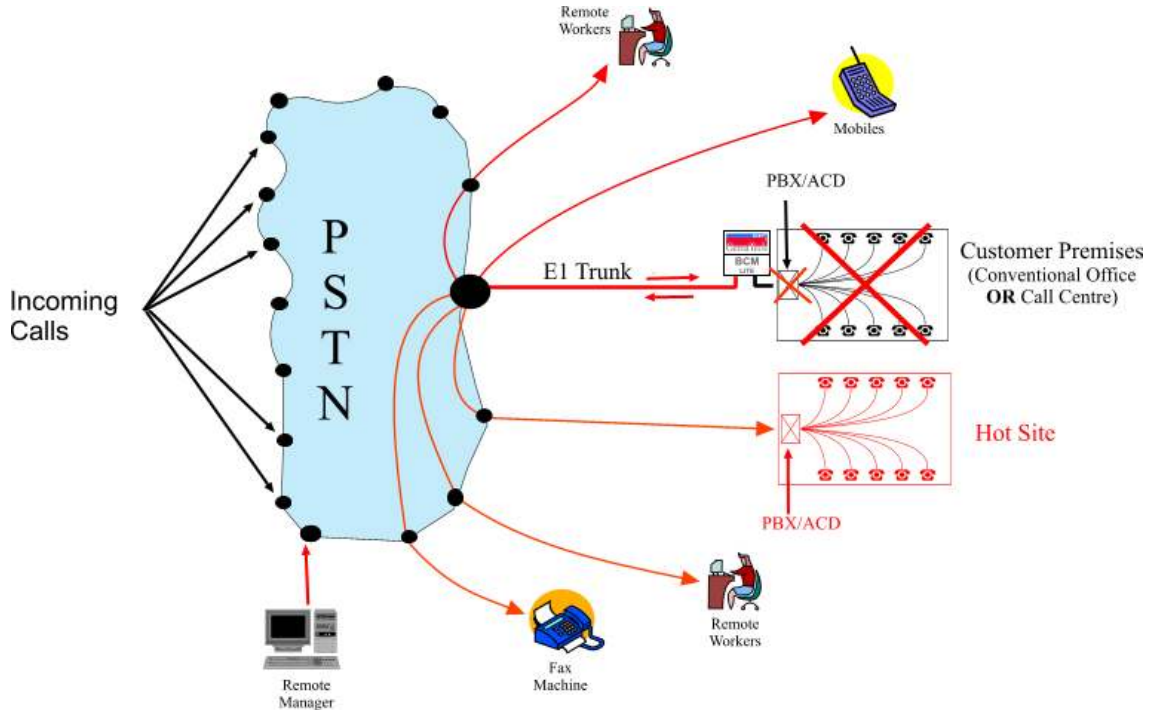


It should be noted however, that if it is decided to locate the BCM^{LITE} OPTION II within the carriers' exchange it will also be necessary to secure a leased line between the exchange and the customers' premises (to replace the standard E1 connection) to obviate the second call charge that will result from the incoming call being initially terminated at the BCM^{LITE} OPTION II and being the subject of a second call from the BCM^{LITE} OPTION II to the customer's premises. Consequently this configuration is only really suitable within major conurbations where the cost of leased lines is extremely competitive.

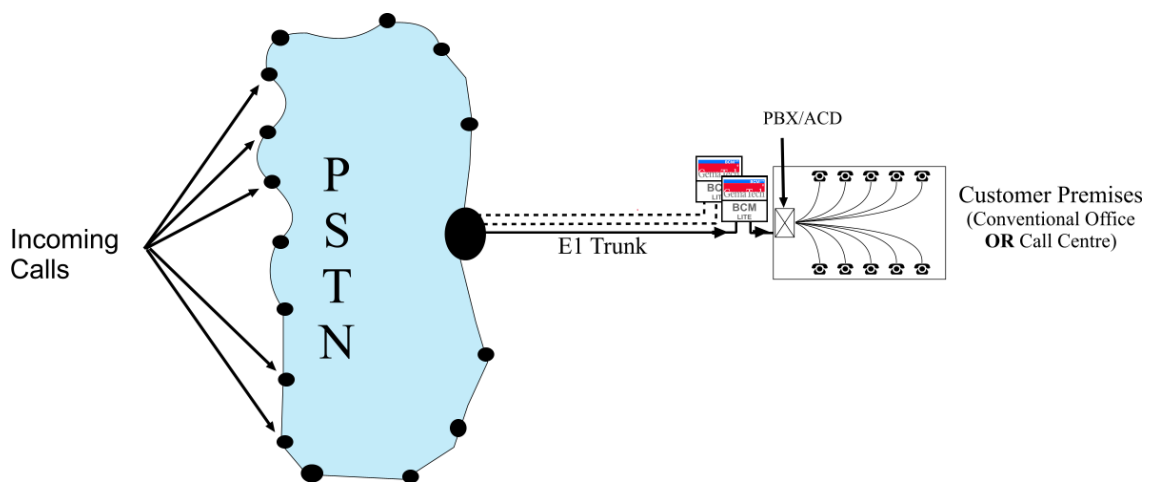
The main benefit that can be gained by adopting this configuration is that the customer does not incur the installation cost and ongoing rental charges associated with the two additional E1 trunks that are required with the installation of the BCM^{LITE} OPTION I. However should the customer premises suffer a disaster then the original capacity of 30 concurrent calls (per E1 trunk) is immediately reduced by 50% to 15 concurrent calls given the fact that incoming calls arriving at the BCM^{LITE} OPTION II will be immediately "turned around" and sent back via the exchange to an alternative destination - using a second channel (15 channels in – 15 channels out) as indicated below.



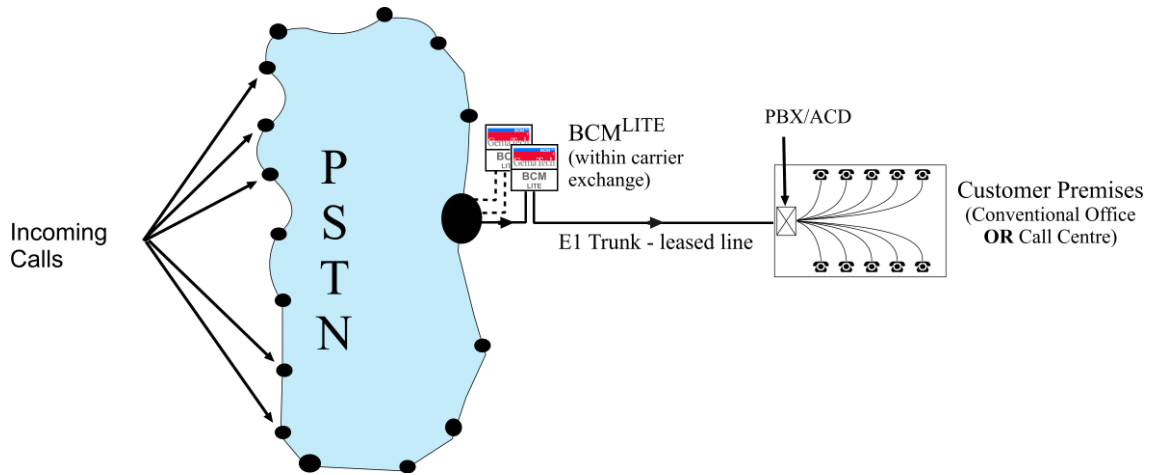
It should be clearly understood however that locating the BCM^{LITE} OPTION II within the customer's premises will not protect the customer from a network failure between the local exchange and the customers building housing the BCM^{LITE} OPTION II unit(s). It will only protect the customer's telecoms infrastructure from either a PBX or building failure – always assuming that the network connection to the BCM^{LITE} OPTION II unit(s) and the location housing the unit remains intact – as demonstrated below.



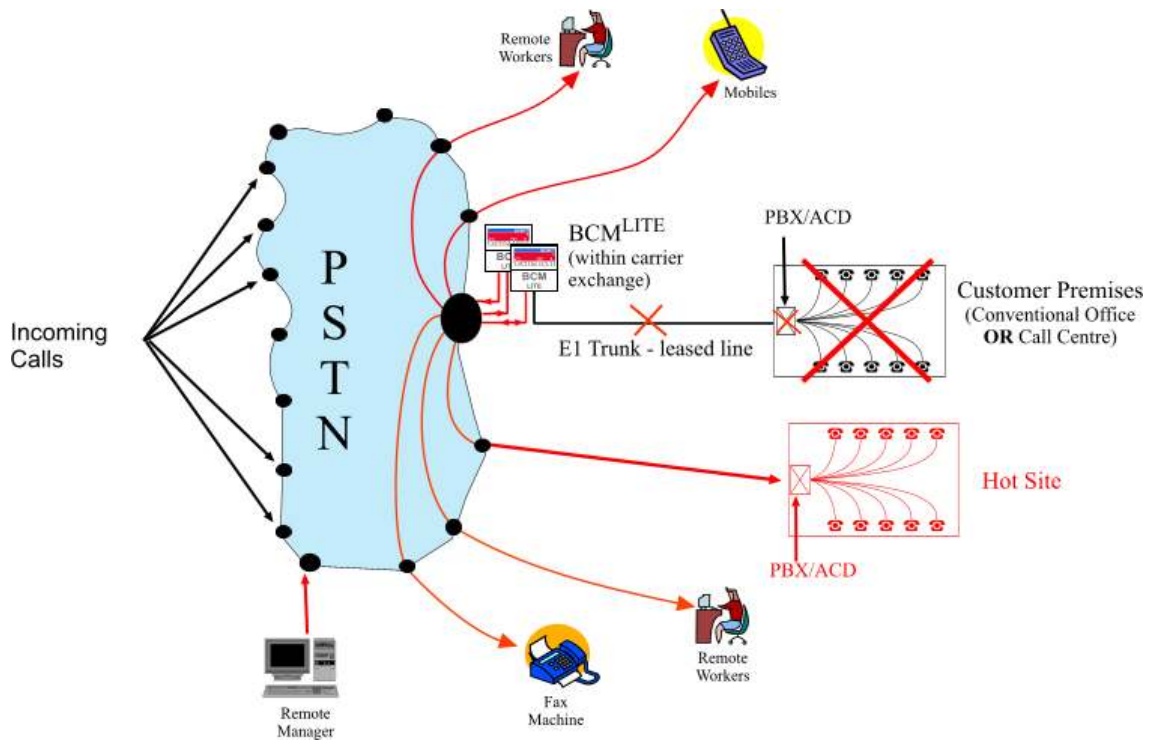
However, IF, upon invocation, a 50% reduction in call capacity is considered to be insufficient for the customer's needs, it is possible to install a second BCM^{LITE} unit - this time a BCM^{LITE} OPTION I unit . As previously explained, this will require the provision of two additional E1 connections being supplied to the second BCM^{LITE} OPTION I unit. This is illustrated as under



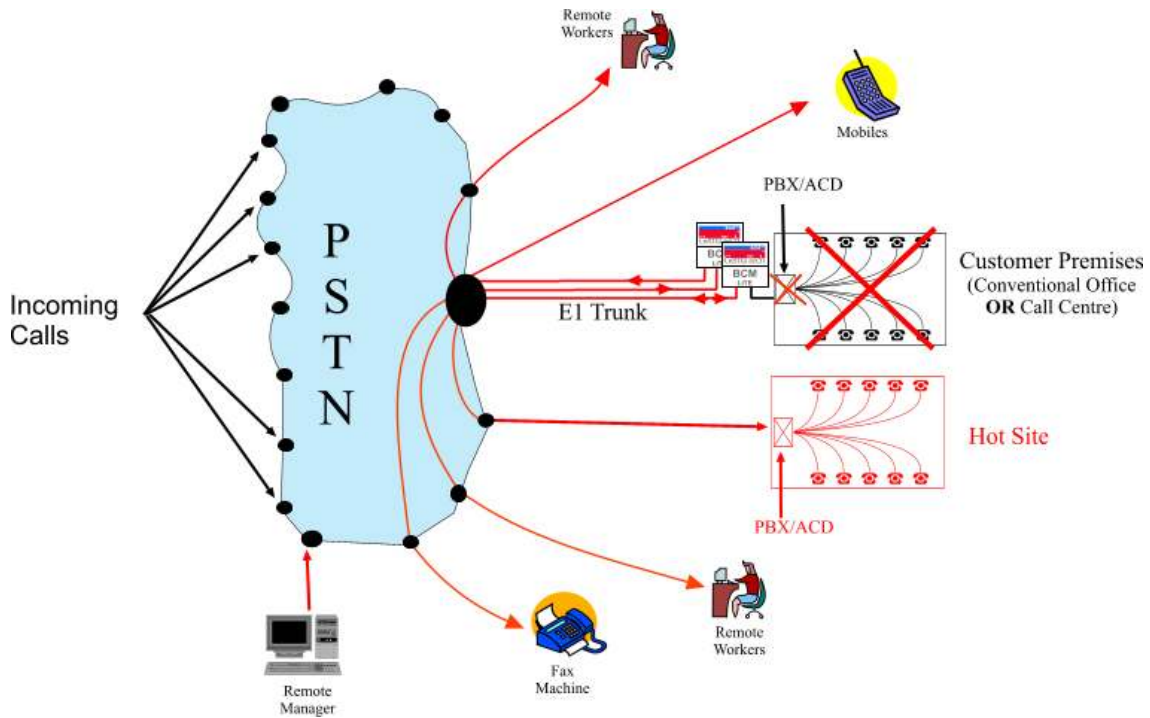
OR



In this configuration, and following an invocation of the most appropriate call routing plan, once the "in line" BCM^{LITE} OPTION II unit has reached capacity of 15 concurrent calls the subsequent incoming calls will "overflow" into the second BCM^{LITE} OPTION I unit which is capable of processing up to 30 additional concurrent calls, thus creating a total capacity of 45 concurrent calls. This may be important if customers wish to be in a position to handle a greater number of incoming calls following a "high profile" invocation to provide additional "help line" services such as crisis lines, information lines, news lines etc – as illustrated below.



This configuration could also be provided by locating the two BCM^{LITE} units within the customer's building or within the property site boundary but again this configuration will not protect a customer's telecommunications infrastructure from a network failure to the building housing the BCM^{LITE} equipment as illustrated below.



3.2.2 Invocation Procedures

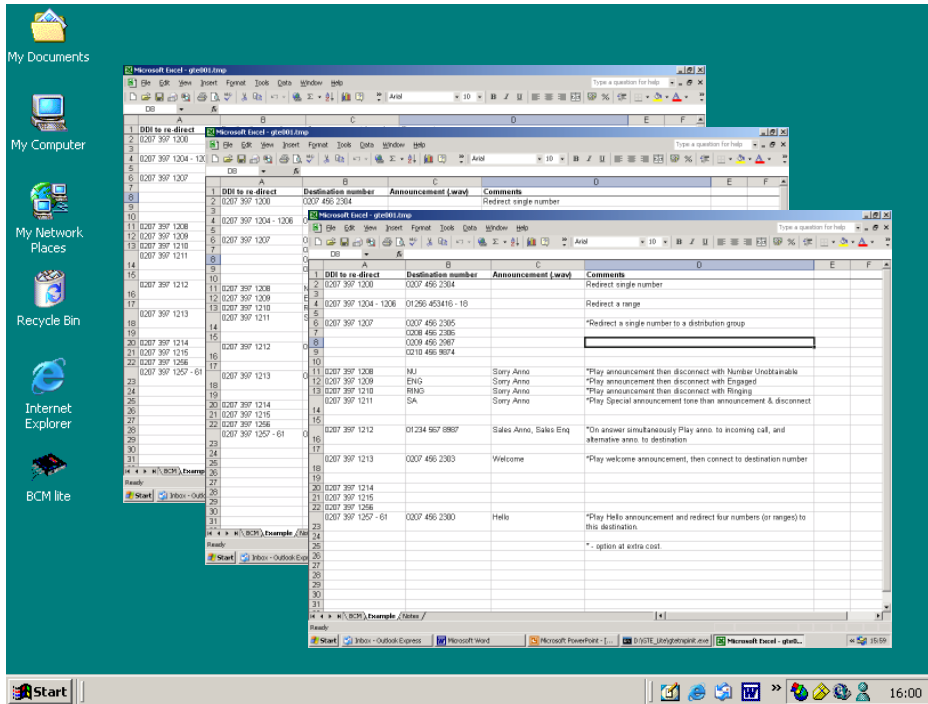
Once the customer has purchased GemaTech’s solution and the equipment has been installed and declared fully operational, the customer’s own management and staff will be in sole charge of the operation of the Solution. Consequently, the customer’s management will be fully trained on the use and implementation of the system during the installation process.

Stage 1

1	DDI to re-direct	Destination number	Announcement (.wav)	Comments
2	0207 397 1200	0207 456 2304		Redirect single number
3				
4	0207 397 1204 - 1206	01256 453416 - 18		Redirect a range
5				
6	0207 397 1207	0207 456 2305		*Redirect a single number to a distribution group
7		0208 456 2306		
8		0209 456 2987		
9		0210 456 9874		
10				
11	0207 397 1208	NU	Sorry Anno	*Play announcement then disconnect with Number Unobtainable
12	0207 397 1209	ENG	Sorry Anno	*Play announcement then disconnect with Engaged
13	0207 397 1210	RING	Sorry Anno	*Play announcement then disconnect with Ringing
14	0207 397 1211	SA	Sorry Anno	*Play Special announcement tone than announcement & disconnect
15				
16	0207 397 1212	01234 567 8987	Sales Anno, Sales Enq	*On answer simultaneously Play anno. to incoming call, and alternative anno. to destination
17	0207 397 1213	0207 456 2303	Welcome	*Play welcome announcement, then connect to destination number
18				
19				
20	0207 397 1214			
21	0207 397 1215			
22	0207 397 1256			
23	0207 397 1257 - 61	0207 456 2300	Hello	*Play Hello announcement and redirect four numbers (or ranges) to this destination.
24				
25				* - option at extra cost.
26				
27				
28				
29				
30				
31				

The operation of GemaTech's BCM^{LITE} is simplicity itself and simply requires the ability to prepare and complete Excel spreadsheets and have basic computer skills i.e. knowledge of how to "drag and drop" using a mouse.

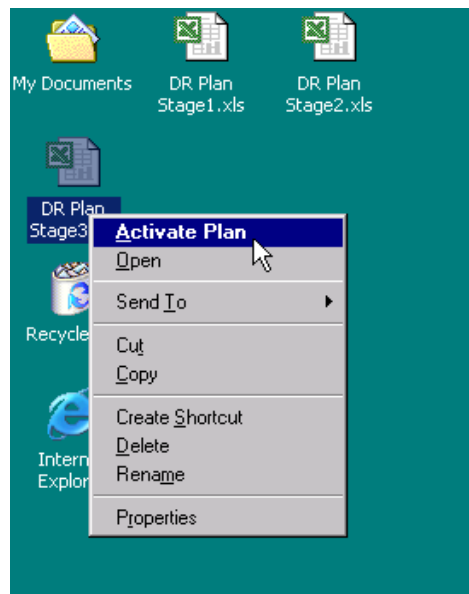
Any number of Microsoft Excel spreadsheets can be saved onto a supervisor's or manager's laptop or remote PC as indicated below.



Stage 2

Firstly secure a live data connection to the BCM^{LITE} unit(s) via either an Ethernet or dial-up connection.

To activate a specific call plan, firstly open the file to check that it is the correct Call Plan and then simply right click on the appropriate Plan icon and then left click on Activate Plan. The incoming calls are now being diverted according to the selected Plan. **It is as simple as that!**



3.2.3 Remote Diagnostics Capability

The GemaTech equipment incorporates a full remote diagnostics capability, which enables GemaTech's technical support personnel to connect to the GemaTech equipment from anywhere with appropriate data connectivity but preferably from their Basingstoke offices. Consequently, GemaTech confirm that they can and will have suitably trained and knowledgeable technical staff available operating from their offices in Basingstoke to resolve any/all technical issues that might arise during a recovery test or full recovery invocation. The cost of providing such support will be charged on a per recovery test basis.

3.2.4 Ongoing Product Support

GemaTech are specialists in the design, development and supply of flexible working solutions and, as such, fully understand and appreciate that organizations need to adopt flexible solutions that enable them to react to corporate change and market forces quickly, efficiently and cost effectively. Consequently, GemaTech have designed all of their products to provide their customers with a powerful and flexible "platform" which enables the end user customer to re-deploy/re-locate the (modular) equipment as circumstances may dictate from time to time. Accordingly GemaTech are continuously working towards the enhancement and "improvement" of existing product ranges.

Given this modular approach, GemaTech will be able to demonstrate how simple it would be to relocate the capital equipment, once purchased, as part of any purchase and ongoing maintenance contract. According it will be easily possible for a purchasing company's technical personnel to undertake the re-deployment/relocation of the GemaTech equipment should it be necessary to undertake such an exercise – possibly with the absolute minimum of training and support from GemaTech. However should it be necessary to engage GemaTech technical personnel to re-deploy the equipment on a regular basis this will incur an additional charge.

GemaTech's policy is to only support the latest, and/or penultimate release of software for any single product module. Consequently, a customer will, by default, receive all relevant product "upgrades" as and when released by GemaTech for the product specification originally purchased. However, should additional "features" be introduced at a later date to enhance the overall product offering these will also be offered to the customer who may choose to purchase the additional feature(s) (or not as the case may be) at appropriate commercial rates.

It should also be appreciated that, building upon GemaTech's "modular approach", it is also possible to extend the application by simply "bolting on" additional hardware units (incorporating common software modules) at an additional modular unit cost. Consequently it will also be possible to reduce the configuration and re-deploy all or part of the GemaTech equipment into other locations if deemed necessary at some later date.

3.2.5 Standard Lead Times for Delivery and Installation

Subject to the satisfactory completion of GemaTech's pre-sale site survey, undertaken to ensure that all information provided by the end-user customer is valid and correct and that GemaTech's equipment can function in the manner required and intended, GemaTech will be in a position to provide a "full" solution with a minimum lead time of 30 days up to a maximum of 90 days

However, completion of the installation will be totally dependent upon the timescales required by the customer's carrier (i.e. BT/C&W/Colt etc) to provide the new/additional E1s necessary to implement the GemaTech Solution. Currently there is no obligation on BT to provide E1 connections within 90 days of receipt of order. It will therefore be readily appreciated that GemaTech will not be the key driver in this process.

4. Features and Benefits

4.1 Features

- An Individual number to individual number.
- Any consecutive range of DDIs to an alternative consecutive range of DDIs – creating a traditional "hunt group" scenario.
- Any specific DDI to any number of alternative DDIs.
- All incoming calls to an individual DDI can be immediately terminated (to reduce the number of Primary Rate ISDN 30 connections required in an invocation) delivering the caller Number Unobtainable (NU), or Engaged Ring tones.
- Incoming calls to specific DDIs can be played specific announcements per DDI (max. recording time 10 minutes across all recordings).
- Any number of DDIs can be re-directed to a single DDI – with an announcement being played to the caller whilst an announcement to the person being called advises who/which number is being redirected to them.

4.2 Benefits

- The customer is in instantaneous and total control of the re-routing of their own incoming calls.
- The operation of the GemaTech solution is simplicity itself and does not require the assistance of "experts".
- The customer can establish any number of pre-defined call plans to choose from when invoking their disaster recovery/business continuity plan.
- Each individual Call Plan can be quickly and easily updated or changed to suit specific circumstances by simply changing the Excel spreadsheet.
- The system can be activated from literally anywhere in the world by a supervisor/manager with security access and management software.
- System is totally carrier and location independent.

5. Additional Options and Upgrades

5.1 Secure Voice Recording - SVR^{LITE}

As a product enhancement to the BCM^{LITE}, GemaTech can also provide their Secure Voice Recording module, SVR^{LITE}, which will enable the customer to call record all telephone conversations (emanating from the incoming calls). This can be invaluable during an invocation as it provides an accurate record of what has been said to callers

during this stressful period. The SVR^{LITE} module will also provide detailed management reporting information such as date and time of day, record incoming Call Line Identity (CLI), if made available, DDI called, the number the incoming call is transferred to, how long the call rang for and how long the call lasted - which will also enable calls to be quickly and easily found (2-20 seconds) and played back over a standard web browser from anywhere in the world! The SVR^{LITE} incorporates a number of USPs (Unique Selling Points), which can be expanded upon if this additional module is of interest.

5.2 Upgrade to Full Business Continuity Manager - BCM

In addition to the basic functionality available from the BCM^{LITE} product, GemaTech can offer an upgrade path, at additional cost, to the full BCM product which includes a much more sophisticated remote call management platform based upon GemaTech's remote ACD (Automatic Call Distribution) and full skills based routing technology. This product provides the capability of providing individual call routing plans (to multiple locations) for individual DDIs, which can be monitored and managed, *live*, with individual changes being made to that specific DDI "on the fly" by the person who "owns" that DDI. With this upgrade it is also possible for managers/supervisors to literally listen in to voice calls in progress to monitor call handling during the invocation – stress affects different people in different ways!

5.3 Rapid Call Out (RCO) Module

A further product module, scheduled for release Q4 2003 is GemaTech's Rapid Call Out (RCO) module, which will provide business continuity managers with the ultimate flexibility of being able to assess the situation immediately post invocation and then record any number of different messages (as may be deemed appropriate in the circumstances) and thus notify all members of staff appropriately – come into the office as normal, go to the hot site, work from home etc.

6. Frequently Asked Questions

6.1 Operational

- **How long will the solution take to initially implement?**

Given the (possibly) complex nature of the existing telecoms infrastructure within the customer's premises, the timescales necessary to implement GemaTech's Solution will be very much dependent upon the information flow that will be necessary from the customer's technical personnel and/or the customer's carrier's Account Manager(s) to enable GemaTech to finalise their specification and decide how best to deliver the required solution.

Notwithstanding the above, GemaTech will require a minimum of 30 days and maximum 90 days (depending upon the finally negotiated full scope of the project taking into account incorporation or otherwise of additional modules as may be required by the customer) from the date that all necessary information has been secured by GemaTech to implement and install the finalised Solution.

- **Once installed, how quickly can the service be invoked?**

GemaTech's Solution is capable of delivering a truly *instantaneous* invocation. However, achievement of this high level of recovery is very much dependent upon the existing configuration of the customer's telecommunications infrastructure and the co-

operation of the various carriers in providing GemaTech/the customer with the necessary connectivity.

As an alternative it may be necessary to rely on a contractual arrangement to be entered into between the customer and the incumbent carrier(s) currently servicing the customer's building(s) to "switch" the incoming calls from the main E1(s) to the "back-up" E1(s) connected to GemaTech's equipment. This can take several minutes.

Once the call traffic is transferred, the customer's supervisors/managers can quickly and easily (in seconds) "load" the selected call routing plan unto the GemaTech Equipment by "dragging and dropping" the relevant Excel spreadsheet unto an Icon on the desktop of their laptop/PC via a data connection to the GemaTech equipment.

- **How is the system and associated hardware maintained and by whom?**

GemaTech would strongly recommend that the customer enter into an annual maintenance and support contract directly with GemaTech, the Terms and Conditions of which being available upon request. GemaTech are able to offer three service levels of support ranging from Monday to Friday 9.00 to 5.00 pm with a response time of within 24hrs of reporting the fault up to full 365/24/7 with a response within four hours.

To provide this level of maintenance GemaTech will require data connectivity to each of the individual BCM^{LITE} units

- **Can the system be tested regularly without affecting business as usual?**

The simple answer is "potentially yes" in that the BCM^{LITE} is capable of receiving and re-routing incoming calls to "by-pass" numbers which will effectively allow the GemaTech solution to be tested during "business as usual". However, the use of by-pass numbers is very much dependent upon the operational policy of the carrier and the functionality available from the respective carrier's exchanges. Accordingly, it will be necessary to discuss this aspect with a customer's incumbent carrier's Account Manager to ascertain what they can and cannot do in order to provide a definitive answer on this question.

- **What Management Information will the solution provide?**

In its (current) most basic form the BCM^{LITE} cannot provide any historical call management information and/or statistics such as the number of calls received, redirected to which alternative locations, call duration etc. However, comprehensive management information such as date and time of day of all incoming calls and, in addition, report on incoming CLI (if made available) and DDI called, the number the incoming call was transferred to, how long the call rang for and how long the call lasted etc. will become available in due course with the development of a specific module for this purpose. Scheduled date for release – Q4 2003

However, this management reporting module is already available as part of our Secure Voice Recoding SVR^{LITE} product and therefore immediately available to the customer if it was decided to incorporate Voice/Call recording into the overall Solution.

It should also be emphasised that, once generated, the call statistics are capable of being exported into Excel, which will enable a whole raft of additional reports to be generated by the customer.

- Can the solution be accessed remotely for programming, update and monitoring purposes?

Yes. Authorized supervisors/managers will have the ability to access the Solution from anywhere in the world over a secure data connection. Once connected to the GemaTech equipment it is simply a case of “dragging and dropping” any one of any number of call plans unto the BCM^{LITE} icon on the supervisor’s/manager’s laptop/PC to activate the divert (via a data connection to the BCM^{LITE} unit). These call plans can be quickly and easily changed simply by “dragging and dropping” a replacement plan unto the icon as before. Live monitoring of individual calls in progress can only be achieved by upgrading to the full BCM product

- Where will the server or technology be physically sited?

GemaTech have gone to great lengths in the design and development process to obviate the need for a server based solution requiring centrally controlled equipment which would effectively introduce a further “single point(s) of failure”

GemaTech’s hardware unit(s) can be located literally anywhere within the same exchange area (in many different locations if required) that can be connected to new ISDN 30 E1 trunks (OPTION I) or in-line with existing E1 trunks (OPTION II). The precise location will need to be discussed and agreed with the customer.

- How “user friendly” is the system/software

Extremely user friendly. As previously explained, the whole process of loading and activating re-routing call plans to activate the system is via the simple process of “dragging and dropping” via the use of a PC mouse. The only other requirement is knowing how to insert information into an Excel spreadsheet.

- What level of manual involvement is required?

None. As described above, use of the Solution is simplicity itself and all necessary “information” and training will be provided within the overall cost of the solution and immediately following installation of the equipment.

6.2 Return on Investment

- What is the cost of the solution?

Given that GemaTech’s BCM^{LITE} products are modular and fully scaleable the cost of the GemaTech equipment will simply be dependent upon the number of units required to fulfil the customer’s requirements i.e. determining how many E1s the customer wishes to recover and/or how many concurrent incoming calls the customer wishes to recover (in multiples of 30)

However, in addition to the cost of the GemaTech equipment it may be necessary to procure additional E1 trunks from the customer’s carrier. This will be dependent upon the choice of BCM^{LITE} OPTION I or OPTION II and the precise configuration required for OPTION II – see section 3.2.2 Product Options earlier in this document.

- Does the proposed solution provide any added value to both the Business Continuity/Recovery processes and Business As Usual?

GemaTech's proposed solution provides a tremendously powerful and flexible platform of modular technology, which enables customers to supplement and add to their initial requirements as may be considered necessary in the future or as budgets permit. Upgrade paths include secure call recording (incorporating GemaTech's SVR^{LITE} modules,) live call management and even more flexible call rostering (by upgrading to the full BCM product). A further upgrade could be by incorporating GemaTech's Rapid Call Out module which has the ability to alert staff to the invocation and provide instructions of where individual members of staff should relocate to continue working.

GemaTech's BCM and BCM^{LITE} products provide, for the first time, a solution which can accommodate the instantaneous transfer of ALL of a company's DDIs to any number (up to 30,000 with the full BCM) alternative locations – the implementation of which being simplicity itself to set up, invoke and manage.

Should the customer wish to examine an alternative solution for delivering an “always on – business as usual” solution whereby business continuity ceases to become an issue then GemaTech would be happy to discuss the implementation of such a solution using their Remote Service Manager (RSM) to deliver such a service.

- If there are capital purchases required for the solution is their a leasing option available?

Yes, GemaTech can offer outright purchase or a three year lease purchase option – subject to status . The three year lease purchase option comprises an initial non-refundable deposit to carry out all necessary on-site surveys with the balance paid as 12 quarterly payments commencing immediately following the “go live” date. These quarterly payments being inclusive of all annual maintenance charges due over the period of the lease purchase agreement.

6.3 Resilience

- How is the system and associated hardware maintained and by whom?

GemaTech would strongly recommend that the customer enters into an annual maintenance and support contract directly with GemaTech, the Terms and Conditions of which being available upon request. See also Section 7. of this Product Specification. GemaTech are able to offer three service levels of support ranging from Monday to Friday 9.00 am to 5.00 pm with a response time of “within 24hrs following notification of a fault” up to full 365/24/7 support with a response time of “within four hours”.

GemaTech will be the sole entity responsible for maintaining the hardware, operating software and application software to be supplied as part of this proposed solution.

- What is the impact if the solution breaks down or cannot be invoked when required?

The impact of a telecommunications failure on the customer's business is something that can only be quantified by the customer. Notwithstanding, GemaTech are acutely

conscious and aware of the importance that needs to be attached to the reliability of any business continuity solution deployed by discerning customers. It is for this reason that GemaTech's GTE hardware platform (used for the BCM^{LITE} product) has been designed with no moving parts (hard discs etc) and as such has a calculated Mean Time Between Failure (MTBF) of 350,000 hours – in excess of 40 years! And no single point of failure. Any software problems that might occur or become evident from time to time can be immediately addressed using our remote diagnostics software thereby ensuring a minimum downtime.

- **What is the likelihood of the recovery solution being impacted by an incident at the customer's premises**

- i) BCM^{LITE} OPTION I: There is little to no chance of GemaTech's Solution being impacted by an incident at the customer's premises (unless of course the "disaster" is of potentially very significant proportions) insofar as GemaTech's equipment will be located in a secure alternative location (preferably the customer's carrier's exchange) or at least one mile (or other such distance as deemed appropriate by the customer – but remaining within the same exchange area) away from the customer's premises.
- ii) BCM^{LITE} OPTION II: Designed to be connected "in-line" with the E1 trunk the GemaTech unit can be located anywhere along the length of the E1 – from within the exchange to within the customer's premises itself. If BCM^{LITE} is installed within the property boundary incorporating the building then the BCM^{LITE} should be housed within a secure (fire-proof, waterproof etc) enclosure.

- **Is the software and hardware future resilient?**

GemaTech firmly believe that all of their products (comprising both hardware and software) are future resilient due primarily to their modular design. All software making up the various product sets comprise many hundreds of smaller modules or "building blocks" which can easily be updated and/or replaced as new features are developed and new applications and technologies become established. The hardware platform, GemaTech's unique GTE (GemaTech Technology Engine) utilises the latest Intel and Analogue Devices' DSP technology and again is fully scaleable – being capable of linking up to 255 GTE units together. The GTE is also VoIP compatible.

6.4 Flexibility

- **Can the solution be implemented anywhere?**

Yes. GemaTech's hardware platform is a simple to install unit measuring some 145mm x 145mm x 40mm. Consequently it can be located and installed literally anywhere that has access to the necessary I421/DASS II ISDN 30 E1 trunks and a 13 Amp. power supply. It requires no special environmental conditions other than "normal" temperature ranges i.e. -20°C to +50°C.

- **Can many destination numbers be selected for each DDI?**

Yes. GemaTech's BCM^{LITE} is an extremely powerful and flexible re-routing platform which is capable of delivering a number of different scenarios by re-routing DDIs on the following basis.

- Individual number to individual number.
- Any DDI within a consecutive range of DDIs to any DDI within an alternative (consecutive) range of DDIs – creating a traditional “hunt group” scenario.
- Any specific DDI to any number of alternative DDIs.
- All incoming calls to an individual DDI can be immediately terminated (to reduce EI capacity in an invocation) delivering the caller NU (number unobtainable), or engaged ring tones.
- Incoming calls to specific DDIs can be played any one of up to 100 specific announcements per DDI (max. total recording time 10 minutes for all recordings).
- Any number of DDIs can be re-directed to a single DDI – with an announcement being played to the caller whilst an announcement to the person being called advises who/which number is being redirected to them.

- **Is it possible to record and issue messages to all or selected DDI numbers?**

Yes. The BCM^{LITE} is capable of holding up to 10 minutes of recordings which can be allocated to up to 100 individual/specific recordings - with an aggregate (total) recording time of 10 minutes.

- **Is it possible to pre-program destination numbers based on a range of scenarios?**

Yes. The BCM^{LITE} is capable of accommodating literally any number of different invocation plans which can be activated simply by dragging and dropping a specific call plan (contained within a simple-to-set-up Excel spreadsheet) onto the relevant BCM^{LITE} or cluster of BCM^{LITE} icons located on the authorised manager’s desktop/PC.

- **Is there a limit to the number of users the solution can support?**

On the assumption that “User” means a specific DDI the BCM^{LITE} is capable of supporting up to 2,048 numbers in both the receiving and re-distribution numbers schedules. If it is necessary to increase this number it will be necessary to upgrade to the full BCM product (which can support up to 10,000 DDIs and up to 30,000 re-distributed termination points - at additional cost) at some point in the future.

- **Will the solution support both a total and partial evacuation of a customer’s building**

Yes. Given the fact that any number of call plans can be established the BCM^{LITE} is capable of re-directing some of the incoming calls back to the originally intended desk position/phone point – IF alternative “bypass” numbers are available/secured from the customer’s carrier.

- **Will the solution support the addition of other offices in various locations in future in the UK**

As explained within Section 2 of this System Description, the whole principle of diverting individual geographical DDIs (0207 for London, 0161 for Manchester etc) requires GemaTech’s equipment being connected in some way to the local geographical exchange. Therefore whilst THE SOLUTION (comprising hardware, operating software and application software) is capable of being relocated/re-deployed and re-connected in any alternative exchange within the UK (there are approximately 6,000 exchanges throughout the UK) only other offices WITHIN THE SAME

EXCHANGE AREA can (depending upon the capability and policy of the carrier) be connected to the same GemaTech Solution. However, it should be emphasised that each BCM^{LITE} installation/unit can only accommodate up to 2,048 DDIs and actual implementation will very much depend on the actual configuration of the E1s serving the “additional” buildings.

- **Is the solution portable if a customer has to move offices in the future?**

Yes. Installation of the BCM^{LITE} comprising a single piece of equipment, measuring some 145mm x 145mm x 40mm is simplicity itself and can be completed in less than 10 minutes. Consequently, it would be extremely easy to disconnect it from any location and reconnect it elsewhere as and when required.

Notwithstanding, it should be remembered that the BCM^{LITE} OPTION I is ideally situated away from the building it is designed to protect and preferably within the customer’s carrier’s local exchange. The BCM^{LITE} OPTION II is designed to be inserted “in-line” and as such can be inserted anywhere along the length of the E1 serving the building.

- **Is the solution capable of covering all telecoms providers both currently and in the future?**

Yes. Each BCM^{LITE} unit is designed to recover a single ISDN30 I421/DASS II E1 and is therefore “carrier independent”. Therefore if, say, two carriers supply the same building then it will be necessary to install a minimum of two “units” to receive the E1(s) from each carrier. However it should be emphasised that the efficient implementation of GemaTech’s Solution relies upon the co-operation of the carrier(s).

This statement is correct both now and in the future.

7. Payment Terms and Costs

A Modular Approach

GemaTech’s BCM^{LITE} product is specifically designed to handle all 30 channels of an ISDN 30 E1 trunk.

Consequently, when considering the deployment of the BCM^{LITE} OPTION I, it will be necessary to deploy one BCM^{LITE} unit for every 30 simultaneous calls that need to be provided post invocation. This option will require the provision of two additional E1s per BCM^{LITE} unit.

If it is decided to deploy the BCM^{LITE} OPTION II unit(s) it will be necessary to provide a minimum of one BCM^{LITE} unit connected in line with each E1 the BCM^{LITE} unit is required to protect. However, it should be clearly understood that in this configuration post invocation the call handling capacity of the system will be reduced by 50% i.e. from handling 30 concurrent incoming calls to 15 concurrent calls (15 inward channels and 15 outward channels). Should it be necessary to recover all 30 simultaneous incoming calls in this configuration it will be necessary to install a second BCM^{LITE} unit per E1 trunk which will also require the provision of the two additional E1 connections.

All costs associated with the provision of the additional E1s including all costs associated with housing the BCM^{LITE} unit(s) are additional to GemaTech’s standard pricing options.

Standard Terms and Conditions

GemaTech's standard terms and conditions for the purchase/lease purchase and annual maintenance have been professionally drawn by GemaTech's solicitors and are available upon request.

Purchase Options

It is possible to procure GemaTech's product range either by outright purchase with an optional maintenance agreement or via a three year lease/purchase agreement which stipulates that a three year maintenance contract must be entered into and which is included in the quarterly leasing payments.

Outright Purchase – Payment Terms

- i) 25% deposit with Purchase Order – 10% non-refundable for undertaking detailed site survey prior to GemaTech formal acceptance of Order.
- ii) 50% (75% in total) payable immediately upon installation and initial on-site testing.
- iii) 25% final payment within 30 days of "go live" date and following formal acceptance – whichever is the earlier.
- iv) **Maintenance:** First year's maintenance payable annually in advance and due as of the "go live" date. Subsequent years being paid quarterly in advance.

Three Year Lease Purchase

- i) 10% non-refundable for undertaking detailed site survey prior to GemaTech's formal acceptance of Order.
- ii) The balance paid by 12 equal instalments commencing on installation immediately following "go live" date.
- iii) **Maintenance:** first three years annual maintenance charges included with the lease/purchase agreement.
- iv) Annual maintenance charges for year 4 onwards by agreement.

8. Technical Specification

8.1 BCM^{LITE} OPTION I

Physical Dimensions	145x145x40mm
Power Requirements	90-280 VAC@50mA
Forced Air Cooling	Not Required
Operational Temperatures	-20° C - + 50° C
Serviceable Parts	None
No of concurrent calls	30
ISDN Protocol supported	DASS II, 1421 (Euro ISDN)
No. DDI's supported	2048
Announcement Option	< announcements 100
Total Recording Time	10 minutes for all recordings
Voice Recording Quality	64kbs un-compressed
Supported 'wav' format	PCM audio
No. of available call plans	Any number

Preparation of Call Plans	Simple Grid
Drag and Drop support	Microsoft Excel
No. of management consoles supported	2
Remote Management Activation	Secure internal connection via high speed Ethernet port OR dial in over PSTN
Max no. of BCM ^{LITE} units linked together	255
Method of connection	2 subscriber ISDN 30 bearers (one in one out). 75Ohm BNC or 120 Ohm RJ45.

Announcements

Audio is delivered to the GTE using voice over Internet Protocol (VoIP) from the control program. Each GTE can store up to 10 minutes of announcements. Each announcement can be played to any number of DDI's, simultaneously on all channels.

The announcement 'wav' files can be dragged and dropped on the management console to allocate announcements to single or multiple DDI's.

8.2 BCM^{LITE} OPTION II

Physical Dimensions	145x145x40mm
Power Requirements	90-280 VAC@50mA
Forced Air Cooling	Not Required
Operational Temperatures	-20°C - + 50° C
Serviceable Parts	None
No of concurrent calls	30 (15 following invocation)
ISDN Protocol supported	DASS II, 1421 (Euro ISDN)
No. DDI's supported	2048
Announcement Option	<100 announcements
Total Recording Time	10 minutes for all recordings
Voice Recording Quality	64kbs un-compressed
Supported 'wav' format	PCM audio
No. of available call plans	Any number
Preparation of Call Plans	Simple Grid
Drag and Drop support	Microsoft Excel
No. of management consoles supported	2
Remote Management Activation	Secure internal connection via high speed Ethernet port OR dial in over PSTN
Max no. of BCM ^{LITE} units linked together	255
Method of connection	2 subscriber ISDN 30 bearers (one in one out). 75Ohm BNC or 120 Ohm RJ45.

Announcements

Audio is delivered to the GTE using voice over Internet Protocol (VoIP) from the control program. Each GTE can store up to 10 minutes of announcements. Each announcement can be played to any number of DDI's, simultaneously on all channels.

The announcement 'wav' files can be dragged and dropped on the management console to allocate announcements to single or multiple DDI's.