

Splicecom   
**maximiser**

4100 Call Server, 4200 Trunk &  
4315/4330 Phone Modules



## Introduction

The **maximiser** business telephony system from SpliceCom provides a breakthrough in integrated communications. Developed from state of the art technology it delivers real life benefits associated with many traditionally separate components in one single, seamless system, supporting from 8 to 5,000 extensions. When used in conjunction with SpliceCom's broad range of Proactive Communication Stations (PCS), the **maximiser** converges your core business applications with your voice and data network, "pushing" the relevant information to the desktops of those who need it in a timely and controlled manner.

Through the use of an innovative architecture, the **maximiser** eliminates the physical limitations of traditional telephone systems, allowing great savings to be made on administration, management and infrastructure costs, especially where multi-site networking is required. This approach allows all businesses, irrespective of size, to benefit from extended communications, and more importantly protects your initial investment by growing with you as your need for communication scales and becomes ever more demanding.

## A single integrated business telephony solution

The **maximiser** system is completely modular and comprises of three different, 19", 1U high, rack mountable modules; 4100 Call Server, 4200 Trunk and 4315/4330 Phone.

### 4100 Call Server Module



At the heart of the **maximiser** architecture lies the 4100 Call Server, which for very small requirements can be deployed as a stand-alone system in its own right. PBX, voicemail/auto attendant, IP Routing, H.323 Gateway and Gatekeeper, Firewall, Dynamic Host Configuration Protocol (DHCP) Server, Apache Web Server and Lightweight Directory Application Protocol (LDAP) Server application are all provided by the 4100 Call Server and housed within a single slim line unit. The 4100 Call Server Module also provides interfaces to support an extensive range of Wide Area Network (WAN) services; Primary Rate ISDN (PRI) (30 channels), Quad Basic Rate ISDN (BRI) (8 channels) a single V.11 interface which supports point-to-point digital services at speeds up to and including 2.048 Mbps and a single 10/100 Mbps LAN port. An eight port 10/100 Mbps Ethernet switch provides LAN connectivity, an optional power supply supporting the 802.3af standard being provided to supply power over the LAN where IP hardphones are deployed. Two 3.5mm sockets are provided to interface to external devices, typically door relays, whilst two trigger inputs to accept signals from fire or intruder alarms, are

also provided in a mini-DIN format. All user-facing interfaces are terminated in RJ45 sockets and mounted on the front of the 4100 Call Server Module. This allows it to be installed in the same cabinet as your structured wiring and patched directly across. All trunk interfaces are mounted at the rear of the 4100 Call Server Module.

## PBX

As a business telephone system, the **maximiser** architecture supports both IP and analogue phones. Analogue phones are connected to the system via the 4315/4330 Phone Modules, however, in an IP only telephony solution, a single 4100 Call Server Module provides all the functionality required to provide a small, yet sophisticated telephony solution. From basic call handling capabilities through to applications until now only found on high-end, PBX's (such as One Number, Simultaneous Ringing and Skills Based Routing), the **maximiser** provides easy-to-use and consistent operation across all types of phones. The system capacity of the **maximiser** can be increased by adding LAN Switches to support more IP Phones, 4315/4330 Phone Modules to support Analogue Phones and/or 4200 Trunk Modules to support more ISDN and WAN connections.

## Voicemail and Auto Attendant

A fully integrated 8 port, 300 hour voicemail and auto attendant system with 30 active mail boxes enabled, is supplied as standard with each 4100 Call Server Module. A total of 1,000 voicemail boxes can be activated as required via a license key. However, the open standards based interfaces of the **maximiser** architecture allows 3rd party voicemail, auto attendant and Interactive Voice Response (IVR) systems to be supported via TAPI and H.323. Due to this, voicemail systems can be both platform and geographically independent allowing them to be sited in the most appropriate location - or locations. The multi-port registration architecture allows voicemail to be spread across many servers, increasing both the overall capacity and resilience of the **maximiser** system. This is especially relevant where speech recognition is deployed.

## ISDN Trunks

The 4100 Call Server Module provides four Basic Rate ISDN interfaces and a single Primary Rate ISDN interface, these can all be used in NT (connecting 3rd party equipment - PBXs, Routers, Fax Servers, etc.) or TE (connecting to ISDN services) modes. When connected to ISDN services, these trunks can be used for incoming and outgoing voice (standard and IP) and IP data calls. These IP data calls can be triggered on-demand, multi-linked to give extra bandwidth as and when required or used as back-up for point-to-point digital links. In situations where more ISDN trunks (or WAN links) are required, additional 4200 Trunk Modules can be added.

## Powered 10/100 Mbps LAN Switch

This eight port, Layer 2 switch provides the means of connecting other **maximiser** modules, IP Phones and the internal company LAN to the 4100 Call Server Module. If more than eight ports are required, this switch can be cascaded into other 3rd party switches. When constructing a **maximiser** system, you have the



choice to keep voice calls separated from your data traffic, as in a traditional voice and data infrastructure, or converge the voice and data network into one. If the decision is made to keep voice traffic separate the integral LAN switch will be utilised to link to 4315/4330 Phone Modules, 4200 Trunk Modules and IP Phones only, again further LAN switches can be deployed where greater connectivity is required. In a fully converged voice & data network, that is one where Quality of Service (QoS) is available throughout the network, the **maximiser** modules, IP Phones and data LAN network traffic and infrastructure equipment will coexist on a single LAN network. Where IP handphones are utilised, the 4100 Call Server Module's support for Powered Ethernet, allows 802.3af compliant devices, such as SpliceCom's PCS 400 & PCS 200, to be powered over the LAN. This eliminates the need for every phone to be separately powered, thereby saving costs and increasing overall system resilience in the case of a building power failure.

## IP Router

The integrated IP Router embedded within the **maximiser** architecture, is distributed throughout the Call Server and Trunk Modules. The primary role of the IP Router is to forward Voice over IP (VoIP) traffic, however, it can also be used to provide Internet, Intranet & Remote Access. Supporting both dynamic (RIP) and static routing, the router is standards based, allowing interoperability with similar devices from other vendors, and provides transport for both data and voice over ISDN, fixed WAN and LAN links - the latter being important for connectivity to DSL and Cable Modem services. 802.1p and DiffServ are supported to ensure voice quality is preserved in a converged voice & data network.

## IP WAN Interface

This connection operates at speeds up to and including 2.048 Mbps and routes IP voice and data traffic over fixed point-to-point digital services such as BT's Kilostream, Kilostream n or Megastream services - the latter being achieved through the use of a V.11-to-G.703 convertor. ISDN calls can be utilised in conjunction with this link to back it up in case of failure.

## 10/100 Mbps LAN Port

High-speed services, such as Digital Subscriber Line (DSL) or Cable Modem are typically provisioned via a customer "modem" with a 10/100 Mbps LAN interface and integral firewall. This would normally be connected to the 4100 Call Server via the eight port LAN Switch. Where this is not the case the service can be connected via the 10/100Mbps LAN port at the rear of the 4100 Call Server. Access to the internal LAN network is then gained via the **maximiser** firewall.

## H.323 Gatekeeper

All **maximiser** trunks and phones register with the H.323 Gatekeeper integrated within the 4100 Call Server architecture, utilising standards based, secure H.323 methodology. Although IP Phones, or in the case of analogue phones, 4315/4330 Phone Modules, pass the phone calls directly between themselves, the H.323 Gatekeeper is responsible for all Phone Registrations, Call Routing and Call Logging. Where integration into large IP

networks is required, the **maximiser's** internal Gatekeeper has the ability to register with multiple external H.323 Gatekeepers, on behalf of all system components.

## H.323 Gateways

Trunk Gateways register with the H.323 Gatekeeper and act as a resource for the Gatekeeper to route calls to and from the public telephone (PSTN) network. Both Call Server Modules and Trunk Modules are capable of operating as H.323 Gateways, allowing distribution across physically separate modules and geographic sites. Where required, optional internal Voice Compression Cards supporting 5, 15 or 30 channels can be deployed to allow a greater number of voice calls to be transported across a fixed speed link. G.711, & G.729a standards based compression techniques are both supported, providing an excellent balance between voice quality and bandwidth efficiency.

## Distributed Data Base (LDAP) Server

The 4100 Call Server Module forms the heart of the **maximiser**, because its data base holds information relating to the rest of the local system components and is core to the overall system operation. In a multi-site network, or a high-availability single-site running standby/redundant modules, this information is replicated centrally and then distributed to the other 4100 Call Server Modules. This allows sites that may be located on different continents to operate as if they were located only inches away from the main system.

As the 4100 Call Server Module is responsible for holding, distributing and replicating this information, all other modules (4200 Trunk Modules & 4315/4330 Phone Modules) are connected to a local 4100 Call Server Module via the LAN. This minimises complexity, allowing easy field installation and deployment of new modules.

## DHCP Server

When installing the **maximiser** in a network where there is no existing Dynamic Host Configuration Protocol (DHCP) Server, the 4100 Call Server Module can fulfil this role. This allows it to automatically allocate IP addresses to any device (PC, Laptop, IP Phone, etc.) connecting to the LAN, thus reducing Call Server overheads.

## Security

The **maximiser** architecture supports standards based authentication (PAP & CHAP) and also provides further security via a firewall, which offers Network Address Translation (NAT) and packet filtering. This firewall offers isolation and protection between two networks; primarily this will be the Internet and the internal company LAN. The firewall can be utilised on dial-up, fixed WAN and LAN-to-LAN connections providing great flexibility and piece of mind.



## 4200 Trunk Module

The 4200 Trunk Module extends the Trunk and WAN capabilities of the **maximiser**, in terms of both quantity of trunks supported and geographic location. The initial 4100 Call Server Module provides a single Primary Rate ISDN (PRI) (30 channels), Quad Basic Rate ISDN (BRI) (8 channels) a single V.11 interface which supports point-to-point digital services at speeds up to and



including 2.048 Mbps and a single 10/100 Mbps LAN port. If greater trunk density is required, the addition of a 4200 Trunk Module provisions a further PRI, Quad BRI and a single V.11 interface, again supporting digital services at speeds up to and including 2.048 Mbps. Connectivity between the 4100 Call Server and 4200 Trunk Modules is achieved over a private LAN network, for separate voice and data networking, or via the internal company LAN if full voice & data convergence is a requirement. The latter requires Quality of Service (QoS) to be supported throughout the LAN network. It is this LAN connectivity that enables the 4200 Trunk Modules to be located anywhere where they can be linked, via Ethernet, to the 4100 Call Server Module. An eight port, 10/100 Mbps LAN switch supporting QoS is provided at the front of the 4200 Trunk Module to meet this need. Where IP hardphones are utilised, there is an option to add a Powered Ethernet PSU to the 4200 Trunk Module, allowing devices supporting 802.3af, such as SpliceCom's PCS 400 & PCS 200, to be powered over the LAN. All ISDN & WAN interfaces are mounted at the rear of the 4200 Trunk Module.

## 4315/4330 Phone Module



The Phone Module is available in two variants, providing connectivity for up to fifteen (4315) or thirty (4330) analogue devices. These could be traditional analogue (POTS) telephones, fax machines or modems. Where you already utilise standard analogue telephones within your company, the deployment of 4300 Phone Modules provides un-paralleled investment protection, whilst allowing the overall capital cost of a **maximiser** system to be minimised. These phones can then be further energised by using them in conjunction with the Proactive

Communication Station (PCS) 50 application which runs on a desktop or laptop PC as a partner to the analogue phone. Connectivity between 4300 Phone Modules and their local 4100 Call Server Module, the core of the **maximiser** system, is achieved over a private LAN network, for separate voice and data networking, or via the internal company LAN with Quality of Service (QoS) support, if full voice & data convergence is a requirement. This LAN connectivity enables 4330 Phone Modules to be located anywhere where they can be linked, via Ethernet, to the 4100 Call Server Module. A 10/100 Mbps LAN port is provided at the front of the 4300 Phone Module to meet this need. All analogue extension interfaces are also positioned at the front of the 4300 Phone Module. This architecture allows installation costs to be drastically reduced as a single Category 5 cable (or better) running from a 4100 Call Server Module to a 4330 Phone Module replaces up to 30 cables in a traditional PBX installation.

## Analogue Extensions

The Phone Module allows standard, low-cost 2-wire, analogue telephones to be used, reducing the overall system cost. Modems and analogue fax machines can also be connected to this module. Analogue DECT devices can be utilised where mobility is required, in a factory environment or by a school secretary for example. DECT solutions provide great flexibility, allowing your employees to always be in contact without needing to be desk or office bound. Where standard Caller Display phones are used the Phone Module forwards information allowing your employees to see who is calling them before they answer. As well as the caller's number (CLI), their name is also displayed. This information is held within the distributed **maximiser** database. Finally, the name associated with the number dialled by the caller is also shown, this could be an employee's direct number (DDI), or it may be that they are participating in a hunt-group; sales, admin, support, etc. The combination of this information allows your employees to know who's calling and to answer the phone accordingly based on the number called. The result is improved client handling and therefore happier customers, the very essence of Customer Relationship Management. The Caller Display is also used to notify users of the number of voicemail messages they have outstanding.

## 10/100 Mbps LAN Port

This 10/100 Mbps Full Duplex Ethernet port provides the means of connecting the 4300 Phone Module to its local 4100 Call Server Module. This could be directly or via your existing LAN infrastructure. When installing a **maximiser** system, you have the choice to keep voice separate from your data traffic, as in a traditional voice and data infrastructure, or converge the voice and data network into one. If the decision is made to keep voice traffic separate Phone Modules will be connected to **maximiser** (Call Server, Phone & Trunk) Modules only. LAN switches can be deployed to provide extra interfaces where more connectivity is required. In a fully converged voice & data network the **maximiser** modules and data LAN network traffic will coexist on a single LAN network with QoS ensuring that voice calls have priority over data traffic, so ensuring that speech quality is preserved.

## H.323 Client

To enable voice calls made from standard analogue phones connected to the 4330 Phone Module, to be converted into IP



voice calls, the module acts as an H.323 Client. All **maximiser** trunks and phones register with the H.323 Gatekeeper integrated within the 4100 Call Server Module architecture, utilising standards based, secure H.323 methodology. Analogue phones connected via 4330 Phone Modules, pass the phone calls directly between themselves, the H.323 Gatekeeper is responsible for all Phone Registrations, Call Routing and Call Logging. Where integration into large IP networks is required, the **maximiser's** internal Gatekeeper has the ability to register with multiple external H.323 Gatekeepers, on behalf of all system components.

### PCMCIA Slot

Each Phone Module features a PCMCIA card slot. This has been provided to support a Wireless LAN card, allowing for easy deployment of analogue phones in environments where cabling may prove difficult (listed buildings, construction sites, retail



environments, etc.), or where permanent installation is not required (temporary workgroups, "virtual teams", call out campaigns, etc.). A Wireless LAN base station connected to the 4100 Call Server via the main LAN will handle the communication path to the Phone Module, negating the need for a physical LAN connection.

### The **maximiser** from SpliceCom - Start Small, Think Large

A single 4100 Call Server Module provides all you require to deploy a simple, yet sophisticated business telephone system with eight extensions and eight trunk lines. The same module allows your system to scale up to 300 extensions, which can be any mix of analogue or IP, and 190 trunk lines, by simply adding 4200 Trunk Modules, 4300 Phone Modules and LAN Switches any where on your LAN network. Multiple 4100 Call Server Modules can be "clustered" to provide larger systems and/or eliminate any single point of failure in business critical environments. In fact, the **maximiser** architecture supports up to one hundred 4100 Call



Server modules, one hundred 4200 Trunk Modules and/or 5,000 extensions distributed across LAN and/or WAN networks. Yet from a network management viewpoint, no matter how many 4100 Call Server Modules you may be using, or where they are located, the system appears, and more importantly is configured and managed, as one, from anywhere, via a simple, platform independent browser interface.

### From 8 ISDN trunks.....to 5000 IP Analogue Extensions



### SpliceCom - Understanding Your Business

In the world of Business Telephony, SpliceCom are unique. Being a Small-to-Medium Sized, UK company ourselves, we fully understand your needs - because we share them with you. We have developed the **maximiser** and Proactive Communication Station, our sole products, accordingly. Between us, the SpliceCom team have enjoyed many years of major success in developing, launching, selling and supporting voice and data products into the Small-to-Medium sized Business market for companies that include Case Communications, Racal Milgo, Bay Networks (now Nortel Networks), 3Com, Network Alchemy, Rocom, SDX Business Systems, Lucent Technologies and Avaya. You can find out more about SpliceCom, the **maximiser** and the Proactive Communication Station by visiting [www.splicecom.com](http://www.splicecom.com)



## 4100 Call Server and 4200 Trunk Module

### Interfaces

**Quad Basic Rate ISDN S/T:**

4 x RJ45 ETSI S/T interfaces CTR3 for Pan European Connection. Supports TE and NT modes.

**Primary Rate ISDN S/T (30 Channels):**

1 x RJ45 ETSI interface CTR4 for Pan European Connection. Supports TE and NT modes.

**WAN:**

1 x 15 pin D-type (V.11, for point-to-point data connections). Operates at speeds up to and including 2.048 Mbps. Self Clocking mode supported.

**LAN (4100 Call Server only):**

1 x RJ45 port, dual speed, 10/100 Mbps FDX Ethernet interface

**Powered LAN Switch:**

Layer 2 Ethernet switch. 8 x RJ45 ports, dual speed, 10/100 Mbps FDX Ethernet interface with integral LEDs for Link and Data. Supports 802.3af for Power over Ethernet. (All ports auto-sense for MDI/MDIX connectivity).

**External Output (4100 Call Server only):**

2 x 3.5mm jack sockets to drive two external door release relays.

**External Input (4100 Call Server only):**

2 x Mini-DIN sockets to accept inputs from external alarm systems.

**Power:**

1 x 48Vdc power jack. 1 x 48Vdc powered Ethernet input. See below.

**Protocols:**

PPP, Multi-Link PPP, MLCP, PAP, CHAP, DHCP\*, NAT, IP, TCP, IPCP, RIP 1, 1.5 & 2, LDAP\*, H.323, H.450 HTML\*, PHP\*, DNS\*, TAPI 2.2 (3.0), 802.3af (\*4100 Call Server only)

### Power

**Primary:**

48Vdc, 1A. Lump-in-Line PSU, CE Safety Approved. Pan-European variant.

Powered Ethernet (supplied as standard on 4100 Call Server, optional on 4200 Trunk Module):

48Vdc, 2.7A. Lump-in-Line PSU, CE Safety Approved. Pan-European variant.

**Dimensions (mm)**

486.80 (w) x 224.00 (d) x 42.23 (h)

**Weight**

4100 Call Server - 3.55kg 4200 Trunk Module - 3.41kg

## 4315/4330 Phone Module

### Interfaces

**Analogue:**

15 (4315) or 30 (4330) x RJ45 extensions. Supports standard analogue (POTS) telephones, fax machines and modems. Integral LEDs for Off-Hook and Ringing. BT SIN 227/242 support for Caller Display. 44V rms nominal Ringing Voltage. 48V nominal On-Hook voltage. 0-24V Off-Hook Voltage. 25mA loop Off-Hook Current.

**LAN:**

1 x RJ45 port, dual speed, 10/100 Mbps FDX Ethernet interface with integral LEDs for Link and Data.

**PCMCIA:**

1 x PCMCIA 5V Card Slot. Drivers for Orinoco 802.11b chip set and WEP.

**Power:**

1 x 48Vdc Power jack. See below.

**Protocols:**

IP, IPCP, TCP, RTP, H.323 (Client), H.450, TAPI 2.2 (3.0)

### Power

48Vdc, 1A. Lump-in-Line PSU, CE Safety Approved. Pan-European variant.

**Dimensions (mm)**

486.80 (w) x 224.00 (d) x 42.23 (h)

**Weight:**

4315 Phone Module - 3.42kg 4330 Phone Module - 3.48kg