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## Technical Bulletin

### Nortel Business Communications Manager

#### Power supply and power consumption information

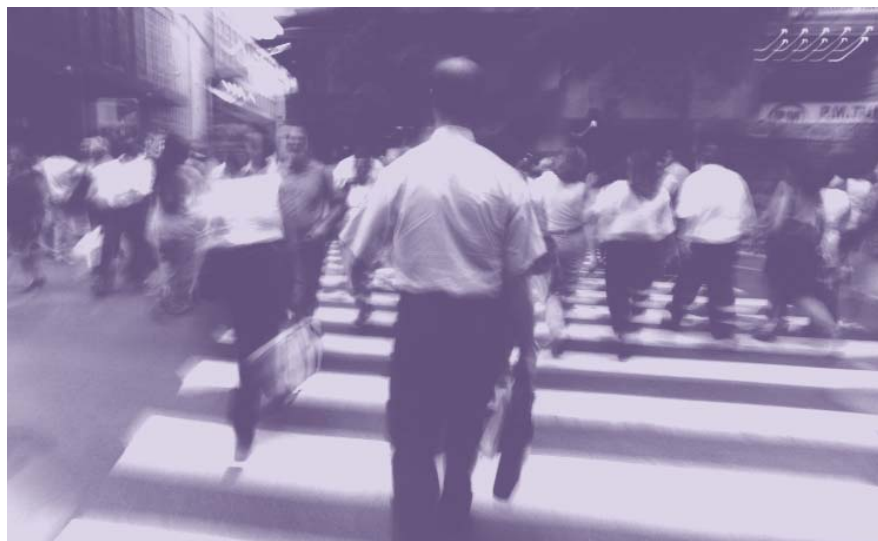
Business Communications Manager (BCM) is an integrated communications system designed for enterprise branch offices and small to medium-sized businesses and is capable of delivering both IP-enabled and pure-IP solutions. Business Communications Manager integrates KSU/PBX capabilities, voice over IP (VoIP) gateway functions, and Quality of Service (QoS) data routing features in a single system. Business Communications Manager 3.0 and higher are available on two Base Unit hardware platforms. On BCM400 it is available with either a standard power supply or a redundant power supply. On BCM200 it comes with a standard power supply only. Expansion Units with either standard or redundant power supplies may be used with the BCM400 platform. BCM50 comes with standard external power supplies for the Main Unit and each Expansion Unit.

BCM 3.5 and higher and BCM50 support an interface to American Power Conversion (APC) Uninterruptible Power Supplies (UPS). APC is a global leader in power availability solutions; APC sets

the standard in its industry for quality, innovation and support, and is already the product of choice for many of Nortel's partners and customers.

The Intelligent APC UPS interface feature allows for the graceful shutdown of BCM under power fail situations and the ability to provide a warning message under these shutdown conditions. Specifically, the APC UPS is configured to shut down the BCM two minutes before the battery is drained.

The standard BCM200/400 Base and Expansion Units use a 300 Watt ATX auto-switching power supply to convert external power to meet the needs of the system. It supplies 3.3V, 5V and 12V power requirements for various components and modules used in the system and auto-ranges to either 110V or 220V. An optional 350 Watt redundant power supply is also available. BCM50 has an external auto ranging power supply for the Main Unit and each Expansion Unit that supplies 19V.



**Table 1. BCM power supply specifications**

Power supply	Rating	Input voltage	Current	Frequency	BTU	Platforms
BCM200/400 Standard PS	300 Watts	Auto-Switching 90/264 VAC	6.0A/3.0A	60/50 Hz	1023	BCM400, BCM200, Expansion Cabinet
BCM400 Redundant PS	350 Watts	Auto-Switching 90/264 VAC	7.0A/3.5A	60/50 Hz	1194	BCM400, Expansion Cabinet
BCM50	120 Watts	Auto-Switching 100-240 VAC	2.0A	50-60 Hz	48.3	BCM50 Main (all) and Expansion Units

**Table 2. BCM power consumption and heat dissipation — Empty**

System	Maximum	BTU
Base Unit BCM400 Standard PS	136.2 Watts	464
Base Unit BCM400 Redundant PS	163.2 Watts	556
Base Unit BCM200	126 Watts	439
Expansion Unit Standard PS	12.4 Watts	42
Expansion Unit Redundant PS	13.1 Watts	44

**Table 3. BCM maximum power consumption and heat dissipation**

System	Low	High	High BTU
Main Unit BCM400 Standard	128.5 Watts	356 Watts	1214
Main Unit BCM400 Redundant	155.5 Watts	383 Watts	1307
Main Unit BCM200	128.5 Watts	241 Watts	822
Expansion Unit	15 Watts	357 Watts	1218
BCM50 (all)		85 Watts	290
BCM50 Expansion Unit		87 Watts	296

Note: Table 3 gives the maximum power consumption when one MBM is installed under the 'Low' column and when the maximum number of MBMs is installed in the 'High' column. Only valid configurations as determined by the BCM configuration tool should be considered. The High power consumption is based on 4 DSM32+s in the BCM400, 2 DSM32+s in the BCM200, and 6 DSM32+s in the Expansion Unit, respectively.

Table 1 above provides specifications for the BCM power supply (Standard and Redundant) in both Base and Expansion Units. Power consumption for a configured system depends on the number and type of Media Bay Modules (MBMs) installed in the BCM Base Units or the BCM Expansion Unit. Heat dissipation is expressed in British Thermal Units (BTUs), and calculated from the amount of power consumed in Watts with 1 BTU = 0.293 Watts. Heat dissipation may also be expressed in Joules based on 1 Joule = 1 Watt (use the Watts ratings for this).

Once MBMs are installed in either the Base or the Expansion Units, the power consumption will be greater. The maximum power consumption will depend on the type and number of MBMs in either system. The BCM400 Base Unit can have from 1 to 4 MBMs, the BCM200 from 1 to 2 MBMs, and the BCM Expansion Unit can have from 1 to 6 MBMs (there are 11 different MBMs). In practice, there will not be many systems with 5 or 6 MBMs in an Expansion Unit.

The BCM50 can support up to two Expansion Units, each of which can accommodate one MBM.

The activation of various software options via keycodes does not affect the power consumption. Power consumption figures for modules are similar using either the standard or the redundant PS.

## Power consumption of configured systems

The approximate power consumption of a configured system can be calculated by adding the power consumption of the empty unit (BCM Base or Expansion, Table 2) with the power consumption figures of the individual MBMs (Table 4) installed. For the station MBMs, this will give the maximum power consumption of a configured system if the maximum number of sets is connected. Please note that the actual power consumption of any particular system may vary somewhat from the calculated consumption.

## American Power Conversion Uninterruptible Power Supply interface

The Intelligent APC UPS interface feature, which allows for the graceful shutdown of BCM under power fail conditions, is made possible by the inclusion of APC PowerChute software on the BCM 3.5 and higher system.

Based on the modest power requirements of the BCM, the suggested APC system for most BCM200/400 applications is the SURTA1500RMXL. It is a rack-mounted unit that comes with the ability to supply 1400VA/1050W. It can be expanded with additional battery packs (1 – SURTA48RMXLBP) to provide additional run time. Up to 4 additional battery packs can be added. APC products are not supplied by Nortel, but are available from most Nortel partners.

The BCM200 with the maximum configuration consumes 241 Watts. The SURTA1500RMXL can support up to 300 Watts for 41 minutes during a power outage.

The BCM400 with the maximum configuration consumes 356 Watts for the standard unit and 383 Watts for the redundant unit. The SURTA1500RMXL can support up to 400 Watts for 30 minutes during a power outage.

The BCM50 main unit alone consumes just 85 Watts. The SURTA1500RMXL can support the BCM50 main unit for two hours. The BCM50 in the maximum configuration (2 Expansion Units) consumes 259 Watts. The SURTA1500RMXL can support the BCM50 with two Expansion Units for over 41 minutes during a power outage.

The BCM400 and an Expansion chassis, or a BCM400 and an Ethernet Switch 460 (formerly BayStack\*) supporting Power over Ethernet with the maximum configuration consume approximately 800 Watts. The SURTA1500RMXL can support up to 800 Watts for 13 minutes during a power outage.

If additional battery packs are added, the run time can be extended as shown above.

The ability to initiate graceful shutdown of the BCM when the UPS battery is almost depleted is only provided on BCM50/200/400. A hault shutdown is supported on BCM1000 if equipped with release 2.5 or higher.

APC Smart UPS is supported on BCM 3.5 and higher through the UPS serial cable interface. The BCM50 is connected to the APC Smart UPS through a USB interface.

Both the *serial interface* and APC's PowerChute Plus management software are integrated with the Unified Manager UPS configuration software and the UPS status monitor software. The serial interface supports only one UPS to BCM connection.

**Table 4. BCM Media Bay Module power consumption**

MBM	Watts	MBM	Watts
DTM	4	DSM16+	17.25*
BRI S/T	3	DSM32+	34.5*
GATM4	1.5	ASM8+	40.4*
GATM8	1.5	GASM8	40.4*
4X16 Combo	20*	FEM	4
DDIM	2.5	DECT	28.6
R2MFC	7.5		

\*Note: For the 4X16 Combo, DSM16+, DSM32+, GASM8 and ASM8+, the actual power consumption depends on the number of station sets connected to the module. The figures given for these modules represent the power consumption with the maximum number of sets connected respectively.

**Table 5. Run time with additional battery packs**

APC UPS	Battery Pack	300 Watts	400 Watts	800 Watts
SURTA1500RMXL	No Battery pack	41 minutes	30 minutes	13 minutes
SURTA1500RMXL	1 - SURTA48RMXLBP	2 hrs 27 mins	1 hrs 51 mins	53 mins
SURTA1500RMXL	2 - SURTA48RMXLBP	4 hrs 21 mins	3 hrs 17 mins	1 hrs 36 mins
SURTA1500RMXL	3 - SURTA48RMXLBP	6 hrs 19 mins	4 hrs 46 mins	2 hrs 20 mins
SURTA1500RMXL	4 - SURTA48RMXLBP	8 hrs 20 mins	6 hrs 18 mins	3 hrs 6 mins

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