TECHNICAL BRIEF

The Motorola MC9500-K:

Improve the ROI and TCO of your mobility solution with game-changing backroom management

Featuring Motorola Mobility Architecture eXtensions (MAX)

Motorola Mobility Architecture eXtensions (MAX) allows Motorola mobile computers to deliver extraordinary value — a truly unprecedented return on investment (ROI) and total cost of ownership (TCO). This unique set of Motorola features turbo charges Motorola mobile computers, driving ease-of-use, ease-of-management, flexibility, modularity, lifecycle and overall system performance to new heights. Features in the MC9500-K include...

MAX *Rugged*
With MAX *Rugged*, you can count on a device built for the most demanding business environments. A minimum of three specifications — industry leading mechanical stress and endurance tests plus environmental sealing — insures dependable performance and maximum lifecycle.

MAX *FlexWAN*
Customer upgradeable 3.5G WAN offers true WAN technology independence. Purchase the MC9500-K with or without the WAN subsystem and add or change WAN technologies (GSM/CDMA) as needed right in the backroom — no need to return the device to a service center.

MAX *Backroom Management*
This game-changing backroom management approach eliminates the high cost of 'rip and replace' in the backroom with a future-proof Universal Accessory System that supports the Motorola MC9500-K, popular existing Motorola mobile computers as well as future generations of Motorola mobile computers.

MAX *Keypad*
A modular keypad architecture allows the exchange of keypads in minutes, right in the backroom, allowing the mobile computer to adapt to changing application requirements and enabling instant on-site replacement in the unlikely event of keypad damage.

MAX *Battery*
Information indicators integrated into the battery itself, displaying the state of charge and the state of health. Users can be sure that they start the day with a battery capable of lasting a full shift — and backroom managers can more efficiently manage the battery pool.

MAX *Sensor*
Offers true enterprise class Interactive Sensor Technology (IST), including dynamic screen orientation, power management, free fall detection and the ability to integrate motion-related data into customized applications.

MAX *Secure*
MAX *Secure* provides the security features required to ensure secure data transmissions over either the WLAN or the WWAN — including highly sensitive applications in government and public safety.

MAX *Data Capture*
Integrate best-in-class advanced data capture functionality, including: 1D, 2D and DPM bar code scanning; signature capture; high resolution image and document capture; RFID and more.

MAX *Locate*
Best-in-class implementation of locationing technology, such as GPS, for line-of-business applications that further increase user productivity and ensure business continuity.

Motorola's new backroom management strategy drives the cost of mobility to a new low, effectively eliminating many accessory-related direct and indirect costs. A new modular universal accessory architecture offers an unprecedented level of flexibility, while a new battery display presents state of charge and state of health, simplifying battery management.

The challenge: inefficiencies in the backroom increase the cost of mobility

Mobile computing solutions have become a strategic initiative for today's businesses, embraced for their ability to extend business applications to the point of economic activity. The workforce can conduct business in real time, resulting in a sharper competitive edge. Productivity and staff utilization are improved. Profitability is increased — and customer service, satisfaction and retention are greatly enhanced.

The rapid pace at which mobile computing technology is evolving creates a challenge for organizations seeking to deploy mobility solutions. Mobile computer lifecycles grow ever shorter as manufacturers seek to offer devices with the latest mobile innovations, including:

- Faster processors and more memory to support more demanding applications
- The latest in mobile operating systems for enhanced security, improved interoperability and faster application development
- Connectivity to next-generation cellular networks that offer more bandwidth and simultaneous voice and data services
- New technologies that enable businesses to further automate processes and achieve more value out of their mobility solutions — such as GPS, RFID and motion sensing

Regardless of whether you are deploying a new mobility solution or want to upgrade existing mobile computers to take advantage of newer technologies, chances are high that the mobile computer you select will not be the same as the mobile computers in use in your facility today. As a result, the backroom must be updated to accommodate new accessories, greatly increasing the overall cost of your mobility solution:

- Chargers for mobile computers and batteries are 'form factor specific' (designed to work with only one device), forcing enterprises to purchase new charging devices for both the mobile computer and the mobile computer battery — along with the associated cables and power supplies — with the purchase of every new device.
- Installation of new device and battery chargers typically requires costly 'rip and replace' in the backroom, including: removal/disposal of the existing chargers, power supplies and cables; purchase and installation of the new accessories; new cabling, additional power outlets, updated shelving and more.
- Today's accessories were not designed with large backroom installations in mind, leading to poor backroom density. As a result, more space may be required in the backroom.
- The current air conditioning system may not offer the capacity required to adequately cool the room to counteract the heat generated by the devices and the new power supplies. This costly endeavor can involve either:
  - the installation of an upgraded air conditioning system — including a new duct system and room temperature sensors, or alternatively;
  - costly structural modifications to the building — some backrooms may be windowless, a portion of a wall may need to be removed in order to enable the installation of window air conditioning units.

- Battery management is also a key pain point in the backroom. The health of a battery is typically determined in an informal fashion through trial and error. Users discover that a fully charged battery did not last as long as expected, and may or may not remember to report that fact at the end of the shift. Potentially unhealthy batteries often end up in a pile in the backroom, where a manager must spend a great deal of time testing and analyzing the batteries. Not only is this cumbersome process costly, but it is also imprecise, forcing backroom managers to purchase a larger battery pool to ensure an adequate supply of healthy batteries is always on hand for end users.

The solution — Motorola MAX *Backroom Management*

To address these backroom-related issues, Motorola developed Motorola MAX *Backroom Management*, an unprecedented backroom management strategy designed to radically simplify and reduce the cost of backroom management. Three key capabilities allow MAX *Backroom Management* to addresses issues in the backroom:

- The creation of the form-factor agnostic universal accessory system, capable of supporting current and future generations of mobile computers
- The creation of an intelligent battery display that allows more efficient management of the battery pool
- A modular universal architecture that allows organizations to purchase the accessories that are required today — with the ability to modify those same accessories to meet changing needs

Form-factor agnostic universal design

The creation of a Universal Accessory System that is form-factor agnostic is another industry first from Motorola. Motorola's MC9500-K is the first Motorola mobile computer to support this new strategy, offering a portfolio of accessories designed to not only live beyond a single generation of Motorola mobile computers, but to also support other current Motorola mobile computers. A new universal interface effectively eliminates the need to 'rip and replace' accessories in the backroom to accommodate next generation mobile computers.

Figure 1: A new universal attachment point

Figure 2: Three easy steps to a new Universal Backroom

Step 1: Hang the Universal Wall Mount Bracket

At the heart of the universal backroom infrastructure is the Universal Wall Mounting Bracket — an agnostic 'back plate' that supports different wall mount configurations. Installing rows of Universal Wall Mounting Brackets is as simple as hanging a phone on a wall.

Step 2: Insert power supply and cables

The power supply and all cables tuck neatly into the bracket. The flexible design allows cables to exit the bracket either horizontally or vertically to best suit your installation requirements.

In addition, since the power supply is separated from the cradle itself, power supplies can be replaced easily, providing greater on-site service flexibility and eliminating the need to return accessories to a Motorola service center.

Step 3: Attach the desired facing

The desired facing is then attached with two thumbscrews, no tools required — choose either a 4-bay charging cradle for the mobile computer or two 4-slot battery chargers.

Optional Guide Cups for 4 Bay Cradle
An optional guide cup is available to help ensure intuitive cradling, regardless of who is cradling the device and their level of experience, the device will be properly cradled, charged, and ready for use in the morning.

Update as needed
As backroom requirements change, you can easily swap power supplies and facings to reconfigure the backroom in record time, without electricians and carpenters — incurring very little cost.

Serviceable on-site
The universal cleat on the charging accessories is rated for twice the typical number of insertions — 20,000 vs. 10,000. And should the cleat wear out through the years, your own staff can quickly and easily replace the cleats, delivering an unprecedented lifecycle, ROI and TCO for installed backroom charging infrastructure.

4 Bay Cradle Facing with optional guide cups

Two 4 Slot Battery Chargers

Benefits of the new universal backroom

The new Motorola Universal Accessory System reduces direct and indirect costs by:

- **Increasing backroom density.** Backroom space requirements are reduced, freeing valuable office real estate or accommodating a higher volume of mobile computers in the backroom.
- **Simplifying backroom installation.** The modular design allows the installation of rows of universal wall mounts and associated power supplies and cables quickly and easily on the backroom walls — without skilled and highly paid electricians and carpenters.
- **Simplifying day-to-day backroom management.** Life for backroom managers is simplified, improving productivity, and freeing staff to focus on more crucial business initiatives. The MC9500-K can be charged with snap-on accessories attached, eliminating the need to detach and manage the standalone accessories as well as reducing the potential for loss. The modularity combines with on-site customer serviceability to further simplify backroom management. Power supplies, cables and the universal cleats on multi-bay cradles can be replaced in minutes. As a result, many accessories no longer need to be returned to a Motorola service center for repair, reducing the time and cost associated with the logistics involved in packing, shipping, tracking and re-installing accessories.

Improved battery intelligence for more efficient battery management

A unique battery strategy addresses battery management for backroom managers as well as end users. A patent-pending easy-to-read intelligent graphical display right on the battery itself presents the state of charge as well as the state of battery health — whether the battery is still capable of holding a full charge or if there is permanent capacity loss that translates into a reduction in shift life. As a result, backroom managers can easily identify and remove batteries that can no longer hold a full charge from the battery pool — and end-users can easily identify whether the battery in their device at the start of the day is capable of providing power for a full shift.

Benefits of improved battery management

The new intelligent battery display:

- **Protects workforce productivity.** End-users and backroom managers alike can verify that batteries have the power required to last all shift long, ensuring that your workers remain connected to your business and mission critical back end systems throughout the workday, able to perform transactions wherever they may be.
- **Reduces battery costs.** Visibility into the real-time state of battery health reduces required inventory levels in the battery spares pool, which in turn reduces the capital carrying costs associated with purchasing batteries. Even a modest reduction in the size of the battery pool translates into substantial savings as illustrated in the chart below.

	Standard Battery	MC9500-K Battery
Total # of users	600	600
# Batteries allocated per person*	2.5	2
Total battery pool	1,500	1,200
Average battery cost	$70	$70
Total capital investment per battery pool	$105,000	$84,000
# Replenishments**	2.5	2
Total battery investment over the lifecycle of the mobile computer	$262,500	$168,000
Total capital savings with MC9500-K intelligent battery:		**$94,500 (36%)**

* The reduction in the size of the battery pool is a result of the real-time visibility into the health of all batteries in the pool, eliminating guesswork in battery management.

** Real-time visibility into the health of all batteries in the pool prevents discarding of healthy batteries sooner than necessary.

Figure 3: New integrated intelligent battery display

A patent-pending easy-to-read intelligent graphical display right on the battery itself presents the state of charge as well as the state of battery health — and the display is always available. When the battery is in a charger, the display is automatically activated. When the battery is standalone or installed in the MC9500-K, a quick press of the status button activates the display.

Figure 4: MC9500-K Battery Display — Intelligent Information Indicators

- **Improves backroom manager productivity.** Instant access to battery intelligence combines with a reduction in spare battery inventory, substantially reducing the effort and cost associated with managing the battery spares pool. Backroom managers are free to handle more crucial tasks, improving workforce utilization.

A modular architecture that allows you to build on today's accessories to meet tomorrow's needs

The modular design of the Universal Accessory System provides a new level of flexibility that simplifies accessory management, reduces costs and future proofs your accessory investment. In addition, you can purchase what you need today and easily modify those same accessories to meet changing needs, providing superior investment protection.

For example, if today's users do not require a spare battery, a single-bay desk cradle can provide the required desktop charging capability. In the future, if users require a spare battery to accommodate longer shifts, you can simply connect a spare battery charger to the cradle — and both can be connected by a single cable to a single power supply.

In addition, you might utilize 4-bay desk mount cradles today in the backroom, but future growth and an expanding workforce mandate a wall mount infrastructure to better utilize available space. The same 4-bay cradle facing, power supply and cables that are installed on the desk mount can be removed and re-installed on the wall mount, allowing enterprises to quickly, easily and cost-effectively modify the backroom to meet changing business needs.

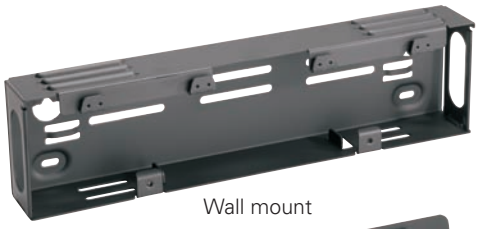
Benefits of a modular architecture

The new flexible architecture:

- **Provides investment protection.** The ability to extend the lifecycle of the backroom accessory infrastructure future proofs and improves your return on investment.
- **Reduces accessory cost.** The ability to modify backroom accessory infrastructure reduces your capital accessory investment.

Figure 5: The power of a modular architecture

Single-bay cradle and single-slot charger



Wall mount

Desk mount

The modular architecture allows enterprises to purchase what is needed today and customize existing accessories to meet the needs of tomorrow. For example, a spare battery charger can be added to a single-bay charging cradle — and connected to a single cable and power supply.

The modular design provides superior flexibility, allowing the modification of existing accessories as required. For example, desk mount 4-bay cradles may have initially served your needs in the backroom, but expansion of the mobile workforce may require wall mounting for better backroom density. With the Motorola Universal Accessory System, you can simply transfer the same 4-bay cradle facing, power supplies and cables to a wall mount unit, preserving your existing investment and allowing the backroom to adapt to changing business needs — with minimal cost.

ROI: benefits you can take to the bank

The chart below illustrates the value of the Motorola MAX *Backroom Management* strategy and the Motorola Universal Accessory System. Eliminating the reoccurring costs to update the backroom with each new mobile computer purchase delivers substantial savings for today's enterprises.

The conservative numbers below cover only the purchase and installation of new cradles — new power supplies, cables, mounting systems are not included, nor are updates to wiring, air conditioning and other facilities-related requirements.

Mobile computers are generally upgraded every three years, translating into two complete churns after initial purchase over a ten-year period. The Motorola Universal Accessory System would save a mid-size company at least $200,000 dollars in that time period, while a large company would save at least $1 million dollars. Since typical upgrades require the purchase of new battery chargers, power supplies and cables as well as more extensive modifications in the backroom, actual costs will likely be significantly higher.

Figure 6: The power of a modular architecture

Company Profile	Medium-size Enterprise	Large Enterprise
# of locations	20	50
# of mobile computers per location	50	100
Total # of mobile computers in service	1,000	5,000
4-Bay Charging Cradle Replacement Costs		
Backroom upgrade costs: # cradles (# devices/4) X .5/hr labor @ $125/hr	$15,625	$78,125
Cradle cost (# cradles X $300)	$75,000	$375,000
TOTALS		
Capital and operational costs	**$90,625**	**$453,125**
Total costs over a 10 year period (assumes 2 complete churns after additional purchase)	**$181,250**	**$906,250**

Data based on internal Motorola findings.

Summary — Increase the ROI and TCO for your overall mobility solution

Until today, with every new mobile computer that is deployed in the enterprise, businesses have been forced to modify the backroom and purchase new accessories, incurring significant additional investment. The groundbreaking Motorola Universal Accessory system eliminates these backroom issues, driving the cost of mobility down by effectively eliminating many accessory-related direct and indirect costs, including:

- The ability to leverage the same backroom infrastructure for multiple generations of mobile computers substantially reduces accessory-related expenditures.
- Fewer batteries, power supplies and cables are required, reducing capital requirements.
- Day-to-day management processes are simplified, improving backroom manager productivity and staff utilization.
- Increased density paves the way for cost-effective expansion of your mobility solutions — the system offers an approximate 30 percent reduction in space requirements (when compared to competitive devices in the same class), enabling you to deploy a substantial number of additional mobile computers without expanding backroom facilities.
- The ability to ensure full shift battery power keeps users connected to your systems, able to perform the on-the-spot transactions required to improve customer service, satisfaction and retention levels.
- Leveraging existing accessories, power supplies, and cables translates into less electronic waste in local landfills, improving your company's 'green' score.

Mobility is more affordable, making it more feasible for businesses to deploy the most up-to-date mobile computers — as well as reap the benefits of the very latest in mobile technologies.

Get a superior return on investment (ROI) and total cost of ownership (TCO) for your Motorola MC9500-K mobility solution — with MAX *Backroom Management* and the Motorola Universal Accessory System.

For more information on how you can put Motorola's MC9500-K mobile computer and the Motorola Universal Accessory System to work in your organization, please visit us on the Web at www.motorola.com/mc9500 or access our global contact directory at www.motorola.com/enterprisemobility/contactus

Why Motorola

Every day, organizations of all sizes all over the world count on Motorola Enterprise Mobility Solutions to maximize personnel effectiveness, improve services, and increase revenue potential. When you choose Motorola for your mobility solution, you get the peace of mind that comes with choosing an industry leader as your technology partner. Motorola offers the proven expertise and technology you need to achieve maximum value and a fast return on investment — as well as first hand experience in virtually every size organization in nearly every major industry. And our end-to-end solutions offer the simplicity of a single accountable source — regardless of the number of vendors involved.

Our comprehensive product offering includes: rugged and enterprise class mobile computers with extensive advanced data capture and wireless communications options; rugged two-way radios for always on voice communications; private wide area and local area wireless and outside the four walls — and to network multiple locations; comprehensive RFID infrastructure, including fixed, mobile and handheld RFID readers; a partner channel delivering best-in-class applications; software solutions that enable centralized and remote management of every aspect of your mobility solution; and a complete range of pre-and post-deployment services to help get and keep your mobility solution up and running at peak performance every day of the year.

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Part number TB-MC9500-BATMG. Printed in USA 08/09.