

1060 Smartcard Reader User Guide



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part of **HID**

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History

Version	Date	Modifications
1.0	15 th March 2012	Document Creation

1 Introduction

Technology Solutions' 1060 Smartcard reader is intended for use with the Motorola MC70, MC75 and MC75A series of Mobile Computers. It provides the Mobile Computer with the ability to read and write contact smartcards including the Common Access Card (CAC).

The 1060 Smartcard reader attaches as a snap on to the host mobile computer. The mechanical design of the unit allows it to be quickly and easily removed, alternatively two screws can be fitted to make the installation semi-permanent. The 1060 Smartcard reader is designed to retain compatibility with standard accessories such as desktop cradles and chargers.

The 1060 Smartcard reader is powered from the host mobile computer. USB and charge connections are passed through from the dock connector on the bottom to the host mobile computer for use without detaching the reader.

2 Parts of the 1060 Smartcard reader

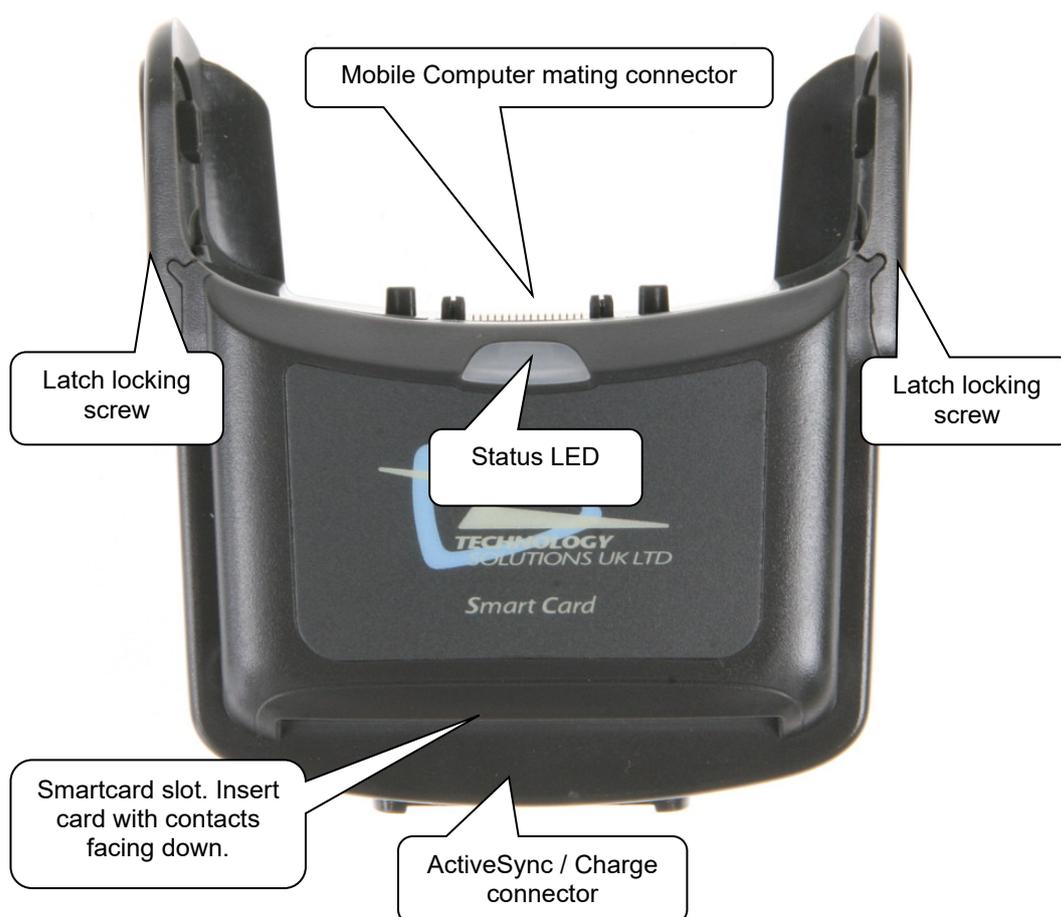


Figure 1: Parts of the 1060 Smartcard reader

3 Attaching to an MC70/75/75A

1. Align the slots on the side of the Mobile Computer with the guides on the fixing clips of the 1060 Smartcard Reader.



3. For semi-permanent installation fit M2×6mm pan head Pozidriv screws into the latch locking screw holes.

Figure 2: Attaching to an MC70/75/75A

4 Detaching from an MC70/75/75A

1. Remove the latch locking screws if fitted.



Figure 3: Detaching from an MC70/75/75A

5 Status LED

The 1060 Smartcard reader has an LED which indicates the operating status of the 1060 Smartcard reader. The LED lights green when the driver is correctly loaded and the Mobile Computer is powered up. The LED lights orange whenever there is communication with a smartcard. The smartcard should not be removed whilst the orange LED is lit.

6 Card orientation

The smartcard is inserted into the slot on the bottom of the 1060. Make sure that the gold contacts on the smartcard face downwards as shown in Figure 4.



Figure 4: Smartcard orientation

7 Versions of the 1060

In 2012 the 1060 product received a refresh. This was required to provide compatibility with the MC75A and to support the latest, high memory capacity smartcards. At the same time the card slot was upgraded to one rated for at least 500 000 insertions. The updated 1060 is identified by a 'B' in the serial number printed on the back of the reader as shown in Figure 5.



Figure 5 : Identifying the 1060 version

The two versions are physically identical, but a different driver is required for use with each. An application note '1060B Smartcard Reader Migration Application Note.pdf' available for download on the Technology Solutions website (<http://www.tsl.uk.com/ProductMC70Smartcard.htm?tab=tab4>) provides additional information on the modifications required to existing applications to use the updated 1060.

The original 1060 was sold as TSL part number 1060-01-SO-MC70-CSC. The updated 1060 is sold as 1060-02-SO-MC75-CSC.

8 Software

8.1 Driver description

The 1060 Smartcard reader driver for each version integrates with the Microsoft Smartcard Resource Manager that is part of the Mobile Computer Windows Mobile 5/6 operating system. This allows the generic Microsoft API to be used to communicate with smartcards (and memory cards) inserted into the Smartcard Reader. The Microsoft documentation for this API can be found here:

<http://msdn.microsoft.com/library/default.asp?url=/library/en-us/wcesecurity5/html/wce50conSmartCardResourceManager.asp>

This API can also be used from managed code using P/Invoke. There are numerous examples on the web and commercial solutions such as the Smartcard API (Windows CE) from CardWerk (<http://smartcard-api.com/index.shtml>).

8.2 Driver installation

As a minimum the software listed in the table below should be installed for each of the different Mobile Computers and Smartcard readers:

Mobile computer	Software required for original 1060	Software required for 1060-B
MC70	SmartCardDriver 1.5.0.1.CAB	1060B Smartcard Driver.CAB BootSmartcard.CAB
MC75	SmartCardDriver 1.5.0.1.CAB	1060B Smartcard Driver.CAB
MC75A	Not supported	1060B Smartcard Driver.CAB SPR21116.CAB for OEM OS 3.41.0003 and earlier.

When prompted, choose 'Device' as the destination to install the drivers to. Once the necessary files have been deployed to the Mobile Computer the Smartcard reader should be attached and the Mobile Computer warm or cold booted. A warm boot is achieved by pressing and holding the power button for approximately five seconds (until the Mobile Computer reboots). A cold boot is achieved by pressing and holding down the 1 and 9 keys and then pressing and releasing the power button.

The driver package available for download on the Technology Solutions website includes drivers and support applications for both versions of the 1060 Smartcard reader. The following table explains what each driver or support application is suitable for use on and what it does.

Application / driver	Reader	Terminal	Notes
SmartCardDriver 1.5.0.1.CAB	Original 1060	MC70	Driver install for original version of 1060. Smartcard reader name appears as "SCR131 Serial Smart Card Reader [1]"
SmartCardDriver 1.5.0.1.CAB	Original 1060	MC75	Driver install for original version of 1060. Smartcard reader name appears as "SCR131 Serial Smart Card Reader [1]"
SmartCardDriver 1.5.0.1.CAB	Original 1060	MC75A	NOT SUPPORTED
1060B Smartcard Driver.CAB	1060B	MC70	Also requires BootSmartcard.CAB Driver install for the latest 1060B. Smartcard reader name appears as 'OMNIKEY CardMan 3111 0'.
1060B Smartcard Driver.CAB	1060B	MC75	Driver install for the latest 1060B. Smartcard reader name appears as 'OMNIKEY CardMan 3111 0'.
1060B Smartcard Driver.CAB	1060B	MC75A	Also requires SPR21116.CAB for OEM OS versions 3.41.0003 (REV C) and earlier. Driver install for the latest 1060B. Smartcard reader name appears as 'OMNIKEY CardMan 3111 0'.
BootSmartcard.CAB	1060B	MC70	Ensures driver loads after warm or cold boot.
BootSmartcard.CAB	1060B	MC75	NOT REQUIRED
BootSmartcard.CAB	1060B	MC75A	NOT REQUIRED
SPR21116.CAB	1060B	MC70	NOT REQUIRED
SPR21116.CAB	1060B	MC75	NOT REQUIRED
SPR21116.CAB	1060B	MC75A	Motorola patch for serial port on MC75A OEM OS versions 3.41.0003 (REV C) and earlier. Required to ensure require reliable serial port operation. Future releases of OS will include the necessary patch.
AprivaFor1060B.CAB	1060B	MC70, MC75 and MC75A	Optional file to create the registry keys required by AprivaGuard to connect to the 1060B Smartcard reader.
Testresman.exe	Original 1060, 1060B	MC70, MC75 and MC75A	Optional file to allow the driver installation to be tested.

8.3 Reader Test

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If required, a quick test that the driver is installed and the reader is operating can be performed using TestResMan. This application is copied to a convenient location on the Mobile Computer and does not require installing.

Launch TestResMan by navigating to the file using File Explorer and tapping on it. If TestResMan launches and then immediately closes the driver has not deployed successfully. Consult the Troubleshooting Section (11.2).

Assuming TestResman launches the list of installed smartcard drivers will be shown in the dropdown list towards the top of the screen. This should be only 'OMNIKEY CardMan 3111 0' (1060B) or 'SCR131 Serial Smart Card Reader [1]' (Original 1060).

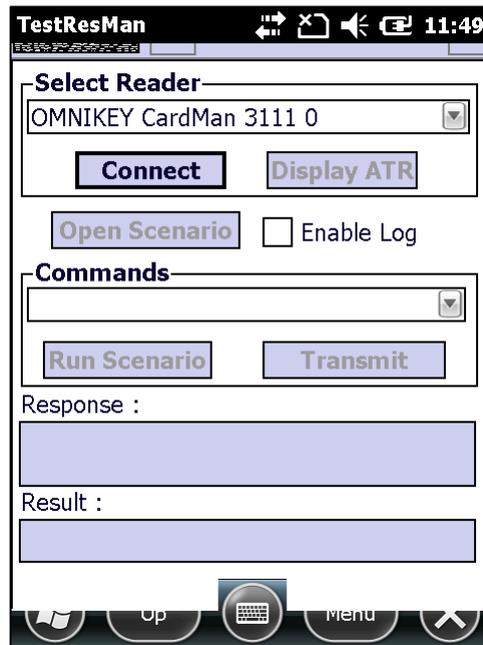


Figure 6 : TestResMan main screen

Insert a smartcard, tap on 'Connect' and select 'Protocol T0|T1' (unless the card protocol is known). The 'Result' at the bottom of the screen should show 'Card is in the reader.' Tap 'Display ATR' to return the Answer to Reset from the inserted smartcard.

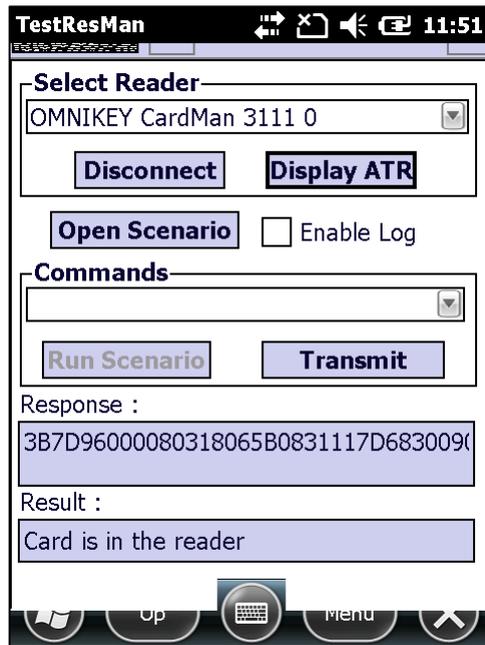


Figure 7 : TestResMan ATR

Tap 'Disconnect' and chose to 'Powerdown Card'. Exit TestResMan by tapping top right 'X' (may be partly concealed).

9 Peripheral compatibility

The 1060 Smartcard Reader is compatible with any standard peripheral that uses the USB port. The serial port is not available because it is used exclusively by the 1060. ActiveSync connections to the Mobile Computer can be established over USB. Power is passed directly through the 1060 to the Mobile Computer allowing charging in standard desktop cradles and cable cups.

It is not possible to use the 1060 Smartcard Reader with the Motorola vehicle cradle (VCD7X00-P000R). To charge the Mobile Computer in a vehicle it is necessary to remove the 1060 Smartcard reader, use the Motorola Auto charge cable (25-70979-02R) or install a RAM Mount vehicle cradle (<http://www.tsl.uk.com/MC70Accessories.htm>).

11 Troubleshooting and Maintenance

11.1 Maintenance

For trouble-free service treat the 1060 Smartcard Reader in the same way as you would the MC70/75/75A and observe the following tips when using the 1060 Smartcard Reader:

- + Do not store or use the 1060 Smartcard Reader in any location that is dusty, damp, or wet.
- + Protect the 1060 Smartcard Reader from temperature extremes. Do not leave it on the dashboard of a car on a hot day, and keep it away from heat sources.

11.2 Troubleshooting

Symptoms	Possible Cause	Action
The Application on the Mobile Computer cannot communicate with the 1060 Smartcard Reader and the green LED is not illuminated.	The Mobile Computer is not firmly seated into the 1060 Smartcard Reader.	Remove and re-insert the Mobile Computer from the 1060 Smartcard Reader, ensuring it is firmly seated.
	The driver is not installed.	Check that the correct driver and support application has been installed. Use TestResMan to check whether the driver is listed.
	The Mobile Computer has previously been rebooted without the Smartcard reader attached, causing the driver to unload.	Warm boot the Mobile Computer.
A user application or Smartcard API reports reader unavailable. The green LED is on continuous but the application reports reader unavailable.	The comm port is being used by another application	Ensure that all other applications have not opened COM1:
	The wrong driver has been installed.	Check that the correct driver has been installed. Use TestResMan to check whether the driver is listed.
	The application is not configured correctly to use the attached Smartcard reader.	See '1060B Smartcard Reader Migration Application Note.pdf' for advice on configuring the application.
The 1060 Smartcard Reader does not read a particular card	The card is upside down / not inserted fully	Check the smartcard is inserted in the correct orientation. Remove and reinsert fully.

Symptoms	Possible Cause	Action
	The wrong protocol / mode is being used to communicate with the card.	Verify the correct protocol (T=0 or T=1) is being used to communicate with the card.
Mobile Computer battery does not charge	The battery is faulty.	Verify that other batteries charge properly. If so, replace the faulty battery.
	Ambient temperature is too warm.	Move the unit to an area where the ambient temperature is between 0°C and 35°C.
	The MC70 is not firmly seated into the 1060 Smartcard Reader.	Remove and re-insert the MC70 from the 1060 Smartcard Reader ensuring it is firmly seated.
ActiveSync cannot connect to the Mobile Computer	ActiveSync is not correctly configured on the PC or the Mobile Computer.	Detach the Smartcard 1060 from the Mobile Computer and try to ActiveSync directly to the Mobile Computer. If this does not work then consult the Mobile Computer User Guide.
	The Mobile Computer is not firmly seated into the 1060 Smartcard Reader.	Remove and re-insert the Mobile Computer from the 1060 Smartcard Reader, ensuring it is firmly seated.
An accessory connected to the 1060 Smartcard Reader does not work	The accessory uses a serial connection to the Mobile Computer.	The accessory is not compatible with the 1060 Smartcard Reader because only the USB port is available on the docking connector.
	The Mobile Computer is not firmly seated into the 1060 Smartcard Reader.	Remove and re-insert the Mobile Computer from the 1060 Smartcard Reader, ensuring it is firmly seated.

13 Regulatory information

13.1 Information to the user - FCC

- This device complies with Part 15 of the FCC Rules.
Operation is subject to the following two conditions:
 - (1) This device may not cause harmful interference, and
 - (2) This device must accept any interference received, including interference that may cause undesired operation.
- Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

13.2 Information to the user – Industry Canada

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

14 Technical specifications

14.1 Summary of specifications

The following table summarises the 1060 Smartcard Reader's intended operating environment and technical hardware specifications:

Performance Characteristics	
Compliance	ISO17816-1, 2, 3, 4 T=0, T=1 protocol 2 wire (SLE 4432/42, S=10), 3 wire (SLE 4418/28, S=9) and I2C (S=8) also supported by reader hardware.
Supported Smartcards	All ISO7816 compliant T=0, T=1 cards
Current consumption	
Current Consumption	Typically 30mA, excluding current drawn by smartcard.
User indication	
Green LED	On whilst driver is loaded and Mobile Computer is active.
Orange LED	Flashes with communication to a smartcard
Connection Interfaces	
Physical interface	USB and power in to charge Mobile Computer.
Reader power supply	Powered from host terminal
ActiveSync	via USB
Physical Characteristics	
Dimensions	95×80×28mm (3.74"x3.15"x1.10")
Weight	90g (3.17 oz)
Enclosure material	PC
Colour	Grey
Material finish	Sparked surface
Mechanical attachment	Snap-on action with optional locking screws
Docking	Attachment maintains dockability with desktop cradle for charging and ActiveSync
Environmental	
Operating Temperature	-10°C to +50°C (14°F to 122°F)
Storage Temperature	-40°C to +70°C (-40°F to 158°F)
Humidity	Up to 95% Relative humidity Non Condensing
Drop specification	Multiple 1.2m (4 foot) drop to concrete over operating temperature range.

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Sealing	Internal components conformal coated
Electrostatic discharge	+/-15kV air discharge, +/-8kV contact discharge
Construction	RoHS compliant
Regulatory	
EMC	EN 55022:2010, EN 55024:2010
	USA - FCC Part 15 Class B
	Canada – ICES-003 Class B
Electrical Safety	IEC 60950-1:2005 + A1:2010
	EN 60950-1:2006 + A11:2009 + A1:2010
	UL 60950-1:2007, CAN/CSA-C22.2 No. 60950-1-07
Notes	
All PCBs are conformally coated	

15 Health and Safety Recommendations

Ergonomic Recommendations

Caution: In order to avoid or minimize the potential risk of ergonomic injury, follow the recommendations below. Consult with your local Health & Safety Manager to ensure that you are adhering to your company's safety programs to prevent employee injury.

- + Reduce or eliminate repetitive motion
- + Maintain a natural position
- + Reduce or eliminate excessive force
- + Keep objects that are used frequently within easy reach
- + Perform tasks at correct heights
- + Reduce or eliminate vibration
- + Reduce or eliminate direct pressure
- + Provide adjustable workstations
- + Provide adequate clearance
- + Provide a suitable working environment
- + Improve work procedures.

For vehicle installation and use

An air bag inflates with great force. DO NOT place objects, including either installed or portable wireless equipment, in the area over the air bag or in the air bag deployment area. If in-vehicle wireless equipment is improperly installed and the air bag inflates, serious injury could result.

RF signals may affect improperly installed or inadequately shielded electronic systems in motor vehicles (including safety systems). Check with the manufacturer or its representative regarding your vehicle. You should also consult the manufacturer of any equipment that has been added to your vehicle.

Power Supply

Use only Motorola-approved cradles, chargers and power supplies with the 1060 Smartcard Reader. Use of an alternative power supply will invalidate any approval given to this device, void the warranty for the product and may be dangerous.

16 Waste Electrical and Electronic Equipment (WEEE)

For EU Customers: All products at the end of their life must be returned to TSL for recycling. For information on how to return product please contact TSL.

17 Warranty

(A) Warranty TSL's hardware Products are warranted against defects in workmanship and materials for a period of twelve (12) months from the date of shipment, unless otherwise provided by TSL in writing, provided the Product remains unmodified and is operated under normal and proper conditions. Warranty provisions and durations on software, integrated installed systems, Product modified or designed to meet specific customer specifications ("Custom Products"), remanufactured products, and reconditioned or upgraded products, shall be as provided in the applicable Product specification in effect at the time of purchase or in the accompanying software license.

(B) Spare Parts Spare parts (i.e. parts, components, or subassemblies sold by TSL for use in the service and maintenance of Products) are warranted against defects in workmanship and materials for a period of thirty (30) days from the date of shipment. Spare parts may be new or originate from returned units under the conditions set forth in subsection D below.

(C) Repair of TSL branded hardware For repairs on TSL branded hardware Products under this Agreement, including repairs covered by warranty, the repair services provided are warranted against defects in workmanship and materials on the repaired component of the Product for a period of thirty (30) days from the shipment date of the repaired Product, or until the end of the original warranty period, whichever is longer. Any such defects shall be notified to TSL in writing within 7 days of the same becoming apparent.

(D) Product Service Products may be serviced or manufactured with parts, components, or subassemblies that originate from returned products and that have been tested as meeting applicable specifications for equivalent new material and Products. The sole obligation of TSL for defective hardware Products is limited to repair or replacement (at TSL's option) on a "return to base (RTB)" basis with prior TSL authorisation.

Customer is responsible for prompt shipment to TSL and assumes all costs and risks associated with this transportation; return shipment to the Customer will be at TSL's expense. Customer shall be responsible for return shipment charges for product returned where TSL determines there is no defect ("No Defect Found"), or for product returned that TSL determines is not eligible for warranty repair. No charge will be made to Buyer for replacement parts for warranty repairs. TSL is not responsible for any damage to or loss of any software programs, data or removable data storage media, or the restoration or reinstallation of any software programs or data other than the software, if any, installed by TSL during manufacture of the Product.

(E) Original Warranty Period Except for the warranty applying solely to the repaired component arising from a repair service as provided in Section C above, the aforementioned provisions do not extend the original warranty period of any Product that had either been repaired or replaced by TSL.

(F) Warranty Provisions The above warranty provisions shall not apply to any Product

(i) which has been repaired, tampered with, altered or modified, except by TSL's authorized service personnel; (ii) in which the defects or damage to the Product result from normal wear and tear, misuse, negligence, improper storage, water or other liquids, battery leakage, use of parts or accessories not approved or supplied by TSL, or failure to perform operator handling and scheduled maintenance instructions supplied by TSL;

(iii) which has been subjected to unusual physical or electrical stress, abuse, or accident, or forces or exposure beyond normal use within the specified operational and environmental

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parameters set forth in the applicable Product specification; nor shall the above warranty provisions apply to any expendable or consumable items, such as batteries, supplied with the Product.

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TSL is not responsible for any damages incurred during shipment if the approved shipping container is not used. Shipping the units improperly can possibly void the warranty. If the original shipping container was not kept, contact your local distributor or TSL to have another sent to you.

TSL shall not be responsible for any injury, damage or loss of whatever kind caused directly or indirectly by the goods whether as a result of their manufacture, operation, use or otherwise and the customer shall indemnify TSL from any claim arising from any loss suffered by any third party.

About TSL[®]



Technology Solutions UK Ltd (TSL[®]), part of HID Global, is a leading manufacturer of high performance mobile RFID readers used to identify and track products, assets, data or personnel.

For over two decades, TSL[®] has delivered innovative data capture solutions to Fortune 500 companies around the world using a global network of distributors and system integrators. Specialist in-house teams design all aspects of the finished products and software ecosystems, including electronics, firmware, application development tools, RF design and injection mould tooling.

TSL[®] is an ISO 9001:2015 certified company.



ISO 9001: 2015

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