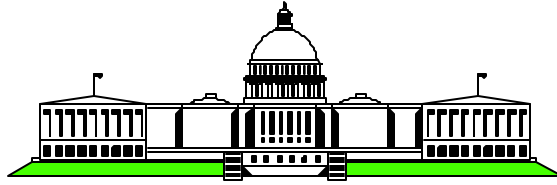


# ORDERING CRYPTO FOR S/390 PROCESSORS



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This presentation describes the process for ordering the Cryptographic support on S/390 servers using the e-config tool. It also provides examples of ordering this Cryptographic support for various servers in the US/Canada geography.

Note that prior to beginning this process you must have the serial number of the server for which the Cryptographic support will be ordered.

If the crypto hardware is not being ordered with the Processor, you will need the individual order number originally submitted or a combination of the customer number and the machine serial number in order to obtain the features necessary to enable the crypto hardware.

## Ordering Process Using e-config



The CEC tab/button of e-config provides the CRYPTO selection tab/button that allows one to:

1. Select the Cryptographic hardware
2. Select the Cryptographic algorithm/key length support (SECURITY)
3. Select the Trusted Key Entry Workstation feature (PC)
4. Select the Smartcard feature (SMART)

The S/390 Cryptographic support ordering process is very simple using the e-config tool.

Similar to ordering CPs, memory, channels etc., ordering the Cryptographic support is done by selecting the CEC tab or button. From this CEC tab/button, select the Crypto tab/button.

Selecting the S/390 Cryptographic support can be broken down into 4 basic steps, selecting:

1. The Cryptographic hardware
2. The Cryptographic algorithm/key length support,
3. Trusted Key Entry workstation (TKE)
4. The Smartcard reader.

Depending on the requirements of the customer, the Trusted Key Entry workstation and the Smartcard reader may be needed. These optional equipment features are additional charge items.

The e-config tool refers to the Cryptographic algorithm/key length support by the selection box called "SECURITY", the Trusted Key Entry workstation by the selection box called "PC" and the Smartcard reader by the selection box called "Smart".

Note: The Smartcard reader is not generally available anymore. This feature has been withdrawn from the newer TKE hardware and is limited to stock on older TKE hardware.

## 1. Select the Cryptographic Hardware



- Cryptographic Coprocessor Facility (CCF)
  - Standard on all zSeries, G6/G5/G4 (not orderable)
  - Optional on G3, M3000, M2000
- PCI Cryptographic Coprocessor (PCICC)
  - Optional on all zSeries, G6/G5
  - Not available on G4/G3 nor Multiprise

Ordering the optional PCI coprocessor feature is done when the cryptographic algorithm/key length support is ordered.

There are 2 types of Cryptographic hardware currently available - the Cryptographic Coprocessor (CCF) and the PCI Cryptographic Coprocessor (PCICC).

All S/390 CMOS servers currently marketed by IBM have 1 or more CCFs (dependent on the server model). The S/390 G4, G5, G6 and zSeries servers have these CCFs as standard equipment, i.e., they are included with the Multi Chip Module (MCM) packaging and delivered with the server.

There is no explicit option for ordering the CCFs in the e-config tool for these servers since they are standard equipment for these server types.

The S/390 G3 and Multiprise 3000 and Multiprise 2000 servers are manufactured and shipped with the CCFs. However, the CCFs are not standard equipment. Therefore the microcode needed to enable these CCFs is a chargeable item.

Ordering the CCFs for these servers is implicit through the ordering of the appropriate Cryptographic algorithm support. This microcode is discussed on the next panel.

The latest type of Cryptographic hardware available for the S/390 processors is the PCI Cryptographic Coprocessor (PCICC). The PCICC, also called an Adjunct Processor (AP), is packaged similar to a I/O card and is installed in the I/O cages of the S/390 servers.

The PCICC feature is only available on the S/390 G5, G6 and zSeries servers. The G5 and G6 servers have one crypto engine per PCICC card while the zSeries servers have 2 crypto engines per PCICC card.

The PCICC feature is considered as a complement to the CCF feature and can only be ordered when CCF Cryptographic algorithm/key length support is selected.

In the e-config tool, the PCICC features are selected using the selection box labeled PCICC.

## 2. Select the Cryptographic Algorithm/Key Length Support (SECURITY)



- Cryptographic Coprocessor Facility (CCF)
  - DES Algorithm (key length = 56 bits)
  - Triple DES Algorithm (key length = 168 bits)
  - CDMF Algorithm (same as DES but with key length = 40 bits)
  - PKA Algorithm (key length = 1024 bits)
  - Exportable PKA
    - key length for key distribution functions = 512 bits
    - key length for digital signature = 1024 bits
- PCI Cryptographic Coprocessor (PCICC)
  - Selecting CCF algorithm enables PCICC selection
  - PCICC algorithm is the same as the selected CCF algorithm

Due to US export regulations, S/390 servers destined for some non-US/Canada countries are restricted to cryptographic algorithms with smaller key lengths. However, these regulations are being relaxed.

This is the heart of the S/390 Cryptographic support ordering process.

Selecting the appropriate Cryptographic algorithm/key length support determines the capabilities of the crypto engine in both the CCFs and the PCICCs.

Due to US export regulations, various flavours of Cryptographic algorithm/key length support are available. However as these regulations have been relaxed, more and more countries can utilize S/390 processors with stronger algorithms and larger key lengths.

The DES algorithm has a maximum key length of 56 bits. The triple DES algorithm has a maximum key length of 168 bits. An exportable variant of the DES algorithm is called the Commercial Data Masking Facility (CDMF) with a maximum key length of 40 bits.

The Public Key Architecture (PKA) algorithm has a maximum key length of 1024 bits for both key distribution and digital signature generation/verification. However exportable PKA only has a maximum of 512 bits for the key distribution functions. The capability of verifying signatures using 2048 bit key lengths is supported in the ICSF software.

Selection of the Cryptographic algorithm/key length support includes both DES and PKA algorithms and through the e-config tool, this selection is done from a selection box call "SECURITY".

Once a Cryptographic algorithm/key length support is selected, the e-config tool allows selection of the number of PCICC features required - for those servers where PCICC features are available.

The same Cryptographic algorithm/key length support selected for the CCFs is automatically provided to the PCICC features.

### 3. Select the Trusted key Entry Workstation feature (PC)



Once a cryptographic algorithm/key length support with a TKE feature is selected, select one of the following:

- No PC hardware
    - if you already have a TKE workstation and do not wish to order another
  - TKE Hardware (Token Ring)
    - for Token Ring connectivity between the TKE and the S/390 processor
  - TKE Hardware (Ethernet)
    - for Ethernet connectivity between the TKE and the S/390 processor
  - TKE Hardware (WAC)
    - for WAC connectivity between the TKE and the S/390 processor
- The newer TKE version 3.0 workstation utilizes the TCP/IP protocol to communicate with the S/390 processor. The older TKE version 2.0 workstation utilizes the VTAM/APPC protocol.

The Trusted Key Entry (TKE) workstation allows the customer a very secure way of entering keys and allows a more granular key management process.

Selection of a Cryptographic algorithm/key length support with the TKE feature enables the selection of a TKE workstation with various network connectivity options or no TKE workstation at all. If there are already TKEs within the site processor complex, you may choose not to order another TKE Workstation. That decision should be based on the site's need for backup and the needs of the key administrators.

Communication between the TKE and the S/390 server is done over either a Token Ring or Ethernet LAN infrastructure. The previous version (version 2.0) of the TKE workstation also allowed the TKE workstation to connect to the S/390 server via a Wide Area Connection (WAC), i.e., modem connection.

The communication protocol used between the newer TKE (version 3.0) workstations and the S/390 server is TCP/IP and VTAM/APPC for older TKE (version 2.0) workstations.

In the e-config tool, the selection of the TKE workstation is done via the PC selection box.

## 4. Select the Smartcard feature (SMART)



Only available with the TKE Version 2.0 workstation, this feature allows the use of Smartcard technology to enter key parts via the TKE.

The Smartcard reader is not available with the newer TKE Version 3.0 workstation.

You cannot select a specific TKE Version.

Only the version 2.0 TKE workstation provides support for a Smartcard reader. This card reader allows the entry of key parts stored on Personal Security cards. Key parts may be stored on diskettes in the absence of a Smartcard reader with the TKE V3.

In the e-config tool, the selection of the Smartcard reader is done via the SMART selection box.

The Smartcard reader is not a generic reader. The Smartcards used with this reader are the IBM Personal Security cards.

When this feature is selected, 3 IBM Personal Security cards are shipped to the customer.

# Crypto Feature Codes



	zSeries	G6/G5	G4	G3 withdrawn	M3000 7060	M3000 withdrawn	M2000 withdrawn
Cryptographic Coprocessor Facility (CCF)	0800	0800	0800	0800	0800	0800	0800
CCF - CDMF with Exportable PKA			0811			0811	
CCF - DES with Exportable PKA			0812			0812	
CCF - DES with Exportable PKA & TKE			0813			0813	
CCF - Triple-DES with Exportable PKA			0832				
CCF - Triple-DES with Exportable PKA & TKE			0833				
CCF - DES with PKA		0814		0804	0804	0814	0804
CCF - DES with PKA & TKE		0815		0805	0805	0815	0805
CCF - Triple DES with PKA	0874	0834	0834		0824		
CCF - Triple DES with PKA & TKE	0875	0835	0835		0825		

Some of these feature codes may only be available in certain geographies due to export regulations.

The following 2 tables describes the various feature codes which are generated when the appropriate cryptographic feature is selected on a particular S/390 server.

Note that not all of these feature codes are selectable in all geographies due to US export regulations.

This table describes the feature codes associated with the CCF. These feature codes represent the Enablement Diskette (LIC) which is shipped as a result of this order.

Remember that the LIC selection for the G3, Multiprise 2000 and Multiprise 3000 servers are charged features.

The 0800 code simply represents the presence of at least one crypto coprocessor feature. The number of coprocessors depends on the model associated with the processor. A paper describing the relationship of number of crypto coprocessors per model is available on the IBM Advanced Technical Support technical documents website: <http://www.ibm.com/support/techdocs/atmastr.nsf>

The features are sectioned into two categories: one representing exportable key length selections and the other with no limitation on DES key lengths and 1024-bit Public Key function.

This table describes the feature codes for the PCICC, TKE workstation and Smartcard reader. All of these components are charged features.

Note that feature codes 834/835 and 874/875 are associated with the CCF but this same Cryptographic algorithm/key length support is also applicable to the PCICC feature.

Although there is no additional selection for the algorithm/key length microcode for the PCICC features, a separate diskette (containing the Functional Control Vector) is shipped and must be loaded into the PCICC cards installed on the servers. This is the reason that the algorithm and key length selection MUST match that used on the CCFs.



## Examples of Ordering Crypto Using the Web Based e-Config Tool for the US/Canada Geography

The following examples show the various options available when selecting cryptographic support for the different S/390 servers in the US/Canada geography using the Web based e-config tool.

Similar facilities exists in the workstation based e-config tool.

# US/Canada Configurator for zSeries & Crypto



The screenshot displays the configuration interface for zSeries and Crypto. On the left is a vertical navigation menu with categories: Proposed, Media, CEC, Processor, Memory, ICB, ISC, FICON, OSA Express, OSA2, Channels, Crypto, IBF/PSC, and PU Usage. The 'Crypto' category is selected. The main area shows a configuration window for '2064-101 NEW4 - CEC: CEC 1 of 2064-101 NEW4 - Crypto'. It has three dropdown menus: 'Security' (set to 'No Crypto'), 'PC' (set to '&lt;There are no selections available&gt;'), and 'Smart' (set to '&lt;There are no selections available&gt;'). Below these is a 'PCI Crypto Base Proposed' section with a note: 'PCI Crypto requires Crypto Security 0874 or 0875.' At the bottom, there are two options: '0861 - Dual PCI CC 2 Ports (0 - 16 By 2 Ports)' with a 'Proposed' value of '0', and 'None'. Three arrows point from the 'Security', 'PC', and 'Smart' dropdowns to pop-up windows. The 'Security' window shows 'No Crypto' with options '0874 - T-DES with PKA' and '0875 - T-DES with PKA &amp; TKE'. The 'PC' window shows 'No PC Hardware' with options '0866 - TKE Hardware (Token Ring)' and '0869 - TKE Hardware (Ethernet)'. The 'Smart' window shows 'None'.

The larger "box" screen is displayed as a result of clicking Crypto under the CEC selector button.

The pop-up windows shown having an arrow pointing to them are the results of clicking on the main windows as discussed previously and making the appropriate selections.

The next foil displays more clearly the order in which these pop-up windows are seen and under what circumstances.

# US/Canada Configurator for zSeries & Crypto . . .



Security	PC (TKE)	Smart	PCICC
No Crypto	There are no selections available	There are no selections available	PCI Crypto requires Crypto Security 0874 or 0875
0874 - T-DES with PKA	There are no selections available	There are no selections available	0861 - Dual PCI CC 2 Ports (0 - 16 By 2 Ports)
0875 - T-DES with PKA & TKE	No PC Hardware	There are no selections available	0861 - Dual PCI CC 2 Ports (0 - 16 By 2 Ports)
	0866 - TKE Hardware (Token Ring)	None	0861 - Dual PCI CC 2 Ports (0 - 16 By 2 Ports)
	0869 - TKE Hardware (Ethernet)	None	0861 - Dual PCI CC 2 Ports (0 - 16 By 2 Ports)

These rows show the options available based on choosing selections from left to right.

The first selection to be made is for the SECURITY selection to be associated with the crypto hardware. A security selection must be made in order to select any other feature.

Once the security feature has been chosen. You may chose to order the adjunct crypto coprocessor, PCICC. You may chose up to 8 of these cards. These charged-features will be shipped separately from the processor, if the feature is selected at the time of processor order. The PCICC cards must be kept under specific environmental controls during shipment.

If the SECURITY feature indicates that a TKE Workstation will be used for key management of the crypto hardware, PC selection is allowed. The PC feature selection allows the choice of ordering the TKE Workstation.

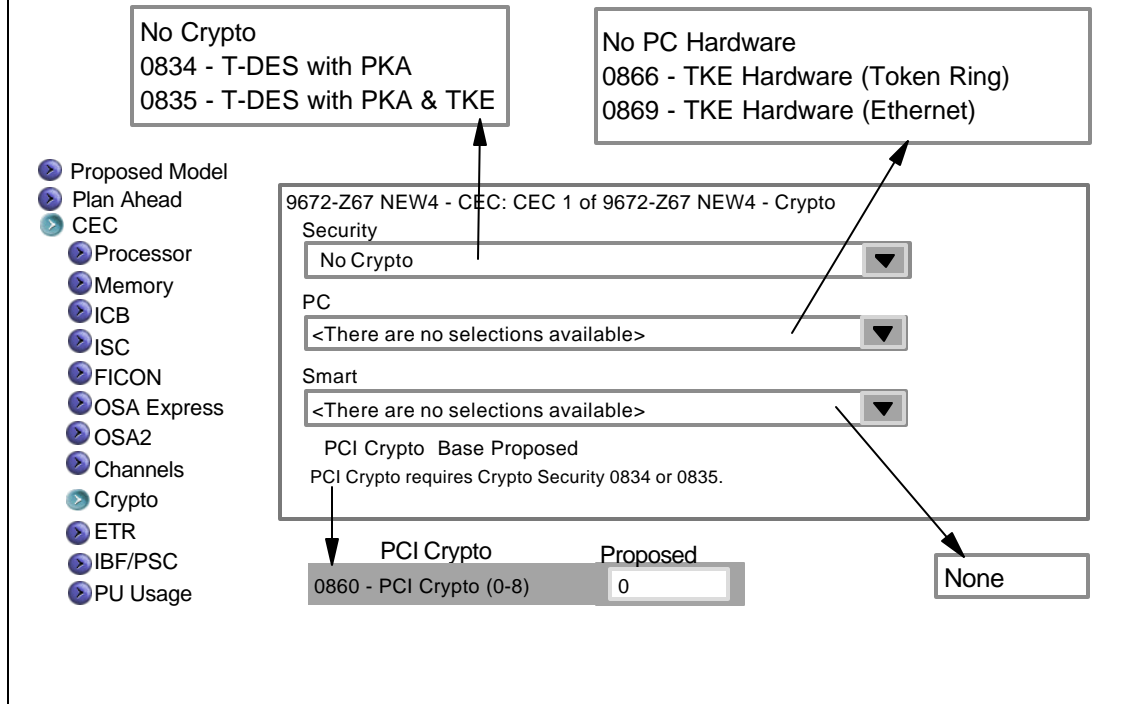
Note: You cannot order only the software to install on your own PC.

If there are already enough TKEs ordered for the account, you can choose not to have more hardware ordered.

A TKE Workstation may support multiple processors as well as multiple LPARs. However, remember that the TKE is a part of the specific processor order. It is not a PC but a part of the processor.

The SmartCard Reader is no longer supported.

# US/Canada Configurator for G6 & Crypto



Note the difference in feature code values for Security and PCIIC. The zSeries codes are distinguishable from the corresponding codes for the G5 and G6 servers.

The larger "box" screen is displayed as a result of clicking Crypto under the CEC selector button.

The pop-up windows shown having an arrow pointing to them are the results of clicking on the main windows as discussed previously and making the appropriate selections.

The next foil displays more clearly the order in which these pop-up windows are seen and under what circumstances.

# US/Canada Configurator for G6 & Crypto . . .



Security	PC (TKE)	Smart	PCICC
No Crypto	There are no selections available	There are no selections available	PCI Crypto requires Crypto Security 0834 or 0835
0834 - T-DES with PKA	There are no selections available	There are no selections available	0860 - PCI Crypto (0 - 8)
0835 - T-DES with PKA & TKE	No PC Hardware	There are no selections available	0860 - PCI Crypto (0 - 8)
	0866 - TKE Hardware (Token Ring)	None	0860 - PCI Crypto (0 - 8)
	0869 - TKE Hardware (Ethernet)	None	0860 - PCI Crypto (0 - 8)

The first selection to be made is for the SECURITY selection to be associated with the crypto hardware. A security selection must be made in order to select any other feature. In some countries you might see different feature selections for Security.

Note the change in the SECURITY feature codes. They were changed in the zSeries to distinguish that processor architecture from the CMOS architecture.

Also, note the difference in feature codes for the PCICC. This is also due to architecture differences for the PCICC packaging. The zSeries has dual coprocessors on a single card feature and the G6/G5 PCICC feature has a single coprocessor per card feature.

Once the security feature has been chosen. You may chose to order the adjunct crypto coprocessor, PCICC. You may chose up to 8 of these cards. These charged-features will be shipped separately from the processor, if the feature is selected at the time of processor order. The PCICC cards must be kept under specific environmental controls during shipment.

If the SECURITY feature indicates that a TKE Workstation will be used for key management of the crypto hardware, PC selection is allowed. The PC feature selection allows the choice of ordering the TKE Workstation.

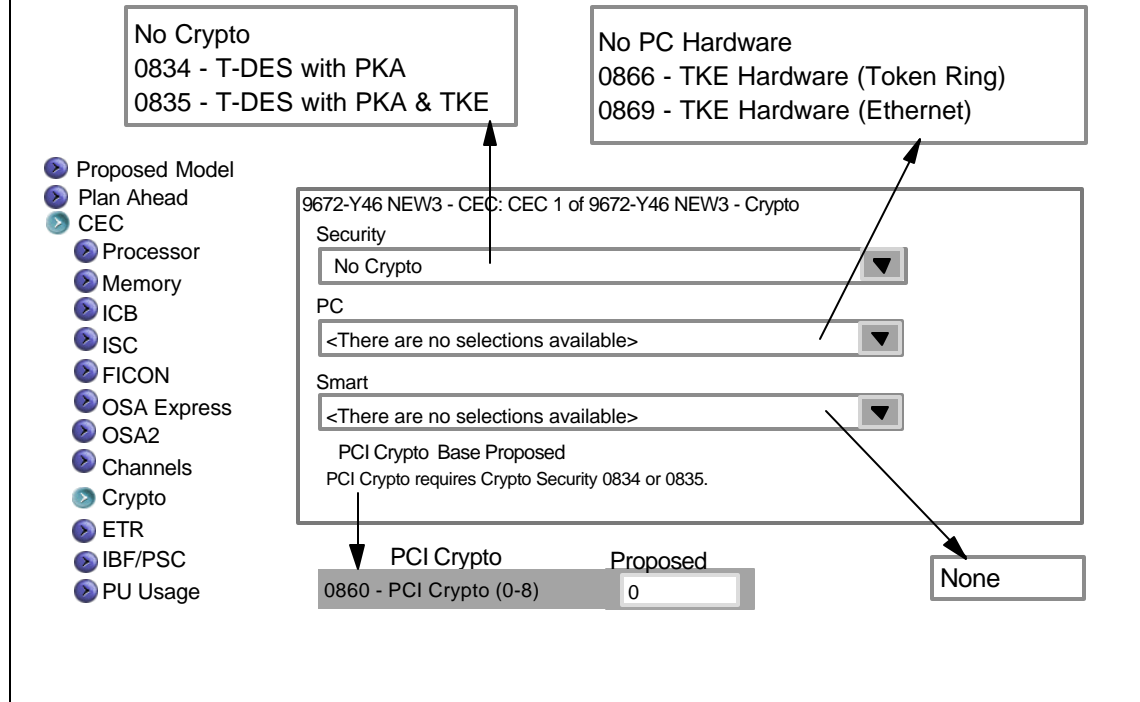
Note: You cannot order only the software to install on your own PC.

If there are already enough TKEs ordered for the account, you can choose not to have more hardware ordered.

A TKE Workstation may support mulitple processors as well as multiple LPARs. However, remember that the TKE is a part of the specific processor order. It is not a PC but a part of the processor.

The SmartCard Reader is no longer supported.

# US/Canada Configurator for G5 & Crypto



The larger "box" screen is displayed as a result of clicking Crypto under the CEC selector button.

The pop-up windows shown having an arrow pointing to them are the results of clicking on the main windows as discussed previously and making the appropriate selections.

The next foil displays more clearly the order in which these pop-up windows are seen and under what circumstances.

# US/Canada Configurator for G5 & Crypto . . .



Security	PC (TKE)	Smart	PCICC
No Crypto	There are no selections available	There are no selections available	PCI Crypto requires Crypto Security 0834 or 0835
0834 - T-DES with PKA	There are no selections available	There are no selections available	0860 - PCI Crypto (0 - 8)
0835 - T-DES with PKA & TKE	No PC Hardware	There are no selections available	0860 - PCI Crypto (0 - 8)
	0866 - TKE Hardware (Token Ring)	None	0860 - PCI Crypto (0 - 8)
	0869 - TKE Hardware (Ethernet)	None	0860 - PCI Crypto (0 - 8)

The first selection to be made is for the SECURITY selection to be associated with the crypto hardware. A security selection must be made in order to select any other feature. In some countries you might see different feature selections for Security:

Once the security feature has been chosen. You may chose to order the adjunct crypto coprocessor, PCICC. You may chose up to 8 of these cards. These charged-features will be shipped separately from the processor, if the feature is selected at the time of processor order. The PCICC cards must be kept under specific environmental controls during shipment.

If the SECURITY feature indicates that a TKE Workstation will be used for key management of the crypto hardware, PC selection is allowed. The PC feature selection allows the choice of ordering the TKE Workstation.

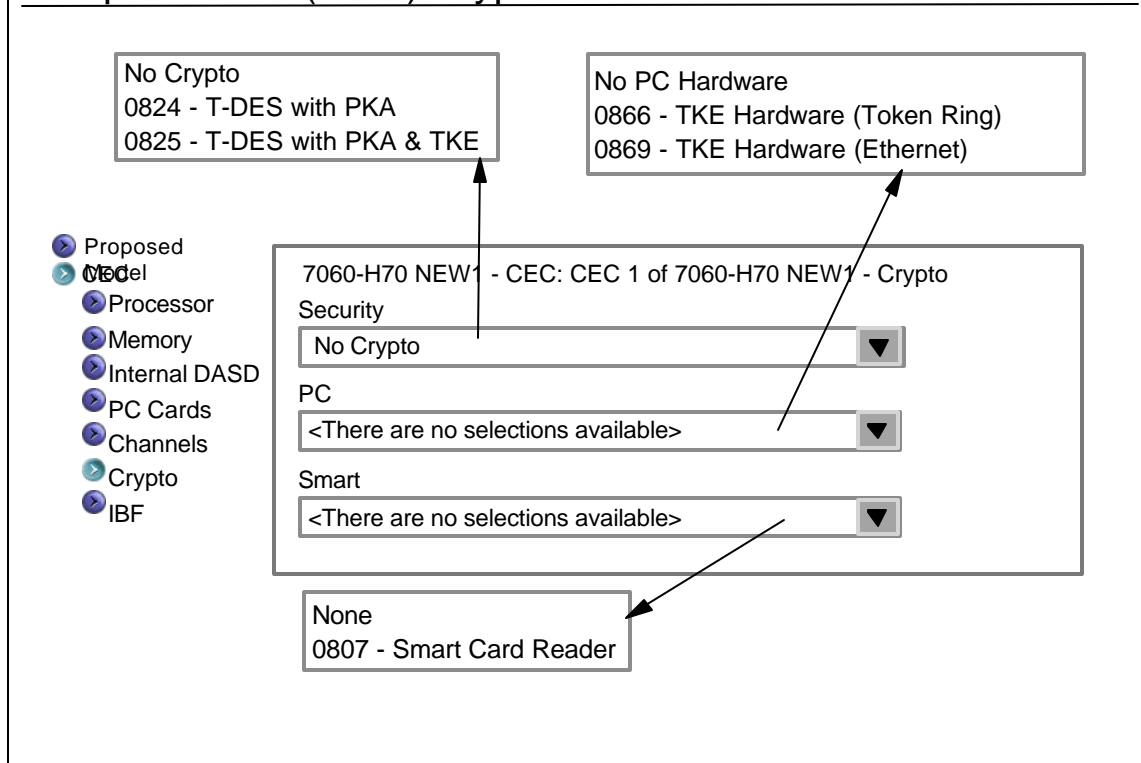
Note: You cannot order only the software to install on your own PC.

If there are already enough TKEs ordered for the account, you can choose not to have more hardware ordered.

A TKE Workstation may support multiple processors as well as multiple LPARs. However, remember that the TKE is a part of the specific processor order. It is not a PC but a part of the processor.

The SmartCard Reader is no longer supported.

# US/Canada Configurator for Multiprise 3000 (7060) Crypto



The M3000 is discussed after the G5 because the M3000 is based on G5 architecture.

The larger "box" screen is displayed as a result of clicking Crypto under the CEC selector button.

The pop-up windows shown having an arrow pointing to them are the results of clicking on the main windows as discussed previously and making the appropriate selections.

The next foil displays more clearly the order in which these pop-up windows are seen and under what circumstances.



# US/Canada Configurator for Multiprise 3000 (7060) Crypto . . .



Security	PC (TKE)	Smart
No Crypto	There are no selections available	There are no selections available
0824 - T-DES with PKA	There are no selections available	There are no selections available
0825 - T-DES with PKA & TKE	No PC Hardware	There are no selections available
	0866 - TKE Hardware (Token Ring)	None
		0807 - Smart Card Reader
	0869 - TKE Hardware (Ethernet)	None
		0807 - Smart Card Reader

The first selection to be made is for the SECURITY selection to be associated with the crypto hardware. A security selection must be made in order to select any other feature. For some countries you might see different Security selections.

Note the change in the SECURITY feature codes. They were changed to distinguish processor architecture.

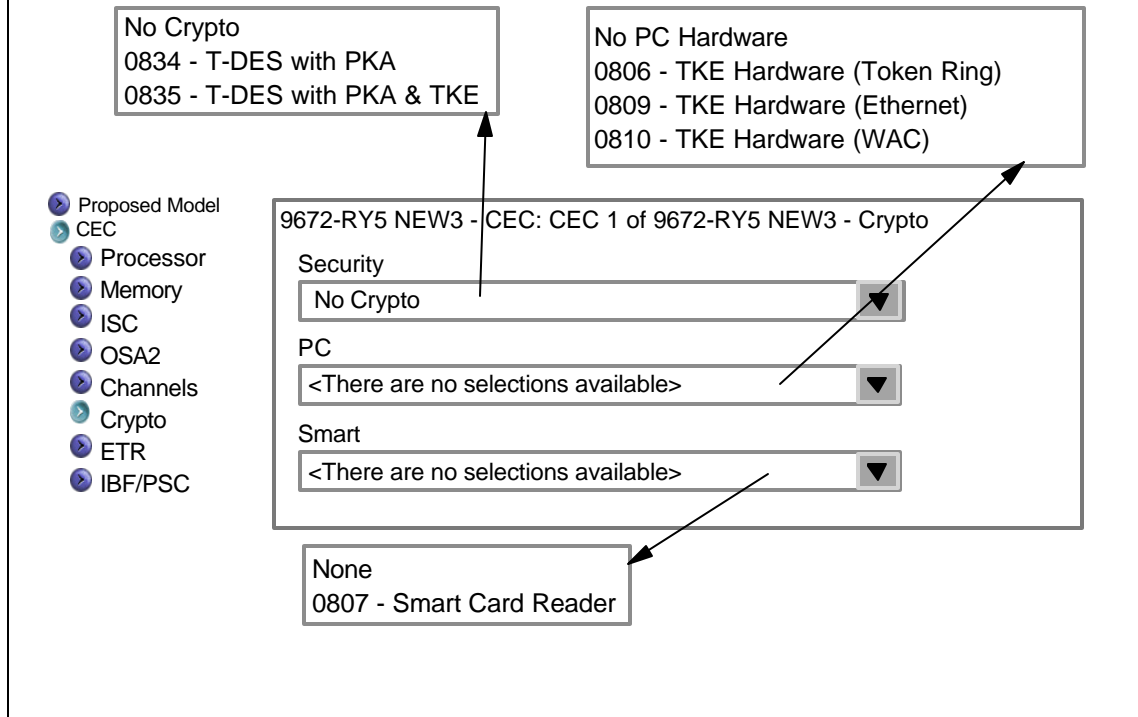
After a Security selection indicating that a TKE is involved has been made you are allowed to select PC Hardware that is associated with a Trusted Key Entry Workstation (TKE). If there are already enough TKEs ordered for the account, you can choose not to have more hardware ordered.

Note: You cannot order only the software to install on your own PC.

If there are already enough TKEs ordered for the account, you can choose not to have more hardware ordered.

A TKE Workstation may support multiple processors as well as multiple LPARs. However, remember that the TKE is a part of the specific processor order. It is not a PC but a part of the processor.

# US/Canada Configurator for G4 & Crypto



The larger "box" screen is displayed as a result of clicking Crypto under the CEC selector button.

The pop-up windows shown having an arrow pointing to them are the results of clicking on the main windows as discussed previously and making the appropriate selections.

The next foil displays more clearly the order in which these pop-up windows are seen and under what circumstances.

# US/Canada Configurator for G4 & Crypto . . .



Security	PC (TKE)	Smart
No Crypto	There are no selections available	There are no selections available
0834 - T-DES with PKA	There are no selections available	There are no selections available
0835 - T-DES with PKA & TKE	No PC Hardware	There are no selections available
	0806 - TKE Hardware (Token Ring)	None
		0807 - Smart Card Reader
	0809 - TKE Hardware (Ethernet)	None
		0807 - Smart Card Reader
	0810 - TKE Hardware (WAC)	None
		0807 - Smart Card Reader

The first selection to be made is for the SECURITY selection to be associated with the crypto hardware. A security selection must be made in order to select any other feature. In some countries you might see different feature selections for Security:

- 0811 CDMF with exportable PKA
- 0812 DES with exportable PKA
- 0813 DES with exportable PKA and TKE
- 0814 DES with PKA
- 0815 DES with PKA & TKE
- 0832 Triple-DES with exportable PKA
- 0833 Triple-DES with exportable PKA and TKE

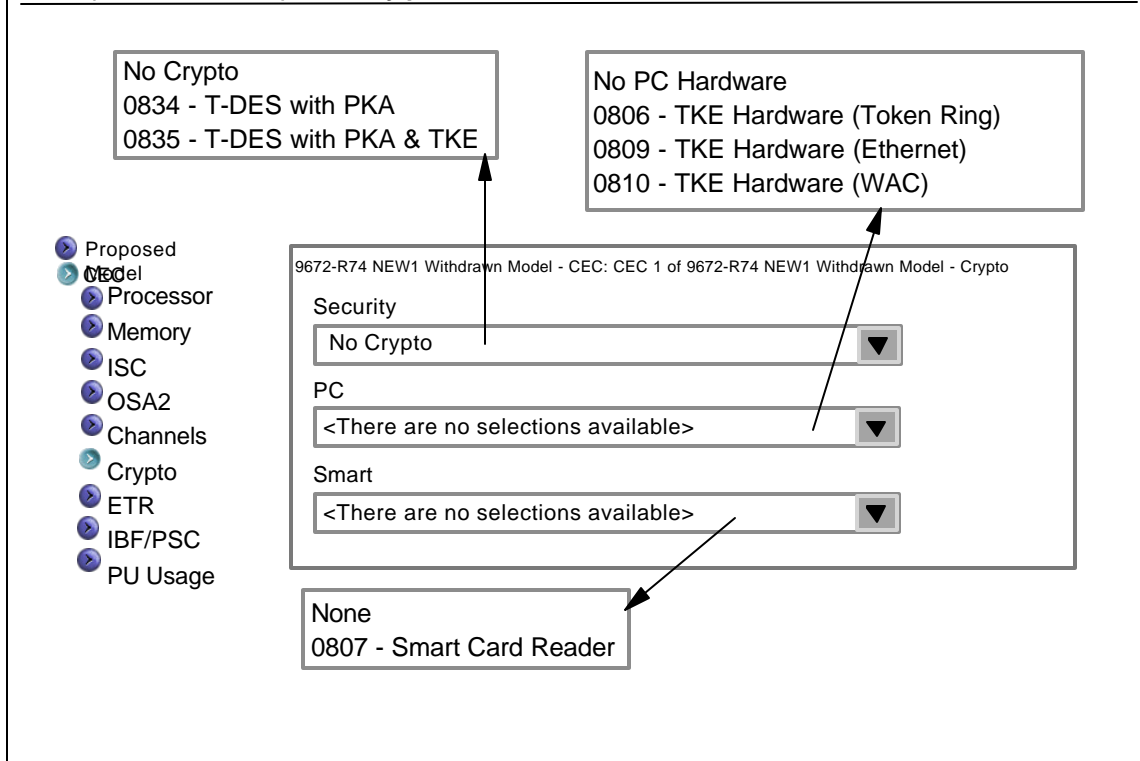
Note the change in the PC feature codes from the previous processors. They were changed in the G5 to distinguish the change in the TKE Workstation Version from V2 to V3.

After a Security selection indicating that a TKE is involved has been made you are allowed to select PC Hardware that is associated with a Trusted Key Entry Workstation (TKE). If there are already enough TKEs ordered for the account, you can choose not to have more hardware ordered.

A TKE Workstation may support multiple processors as well as multiple LPARs. However, remember that the TKE is a part of the specific processor order. It is not a PC but a part of the processor.

Version 2 Workstations may not be available, in which case, no Smart Card Reader will be orderable. There is also the possibility that even with TKE V2, Smart Card Readers may not be available. These components are no longer manufactured.

# US/Canada Configurator for G3 (withdrawn) & Crypto



The larger "box" screen is displayed as a result of clicking Crypto under the CEC selector button.

The pop-up windows shown having an arrow pointing to them are the results of clicking on the main windows as discussed previously and making the appropriate selections.

The next foil displays more clearly the order in which these pop-up windows are seen and under what circumstances.

# US/Canada Configurator for G3 (withdrawn) & Crypto . . .



Security	PC (TKE)	Smart
No Crypto	There are no selections available	There are no selections available
0804 - T-DES with PKA	There are no selections available	There are no selections available
0805 - T-DES with PKA & TKE	No PC Hardware	There are no selections available
	0806 - TKE Hardware (Token Ring)	None
		0807 - Smart Card Reader
	0809 - TKE Hardware (Ethernet)	None
		0807 - Smart Card Reader
	0810 - TKE Hardware (WAC)	None
		0807 - Smart Card Reader

The first selection to be made is for the SECURITY selection to be associated with the crypto hardware. A security selection must be made in order to select any other feature. For some countries you might see different feature selections for Security:

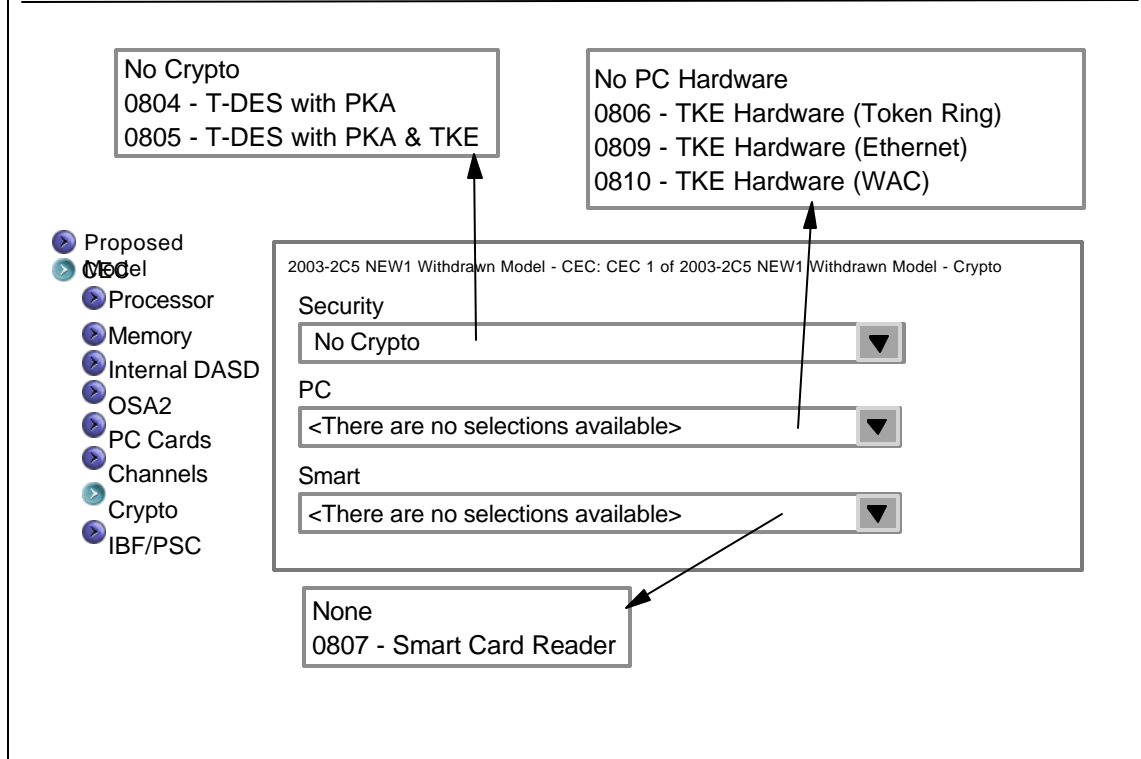
- 0811 CDMF with exportable PKA
- 0812 DES with exportable PKA
- 0813 DES with exportable PKA and TKE
- 0814 DES with PKA
- 0815 DES with PKA & TKE
- 0832 Triple-DES with exportable PKA
- 0833 Triple-DES with exportable PKA and TKE

After a Security selection indicating that a TKE is involved has been made you are allowed to select PC Hardware that is associated with a Trusted Key Entry Workstation (TKE). If there are already enough TKEs ordered for the account, you can choose not to have more hardware ordered.

A TKE Workstation may support multiple processors as well as multiple LPARs. However, remember that the TKE is a part of the specific processor order. It is not a PC but a part of the processor.

Version 2 Workstations may not be available in which case, no Smart Card Reader will be orderable. There is also the possibility that even with TKE V2, Smart Card Readers may not be available. These components are no longer manufactured.

# US/Canada Configurator for Multiprise 2000 (withdrawn) Crypto



The larger "box" screen is displayed as a result of clicking Crypto under the CEC selector button.

The pop-up windows shown having an arrow pointing to them are the results of clicking on the main windows as discussed previously and making the appropriate selections.

The next foil displays more clearly the order in which these pop-up windows are seen and under what circumstances.

# US/Canada Configurator for Multiprise 2000 (withdrawn) Crypto . . .



Security	PC (TKE)	Smart
No Crypto	There are no selections available	There are no selections available
0804 - T-DES with PKA	There are no selections available	There are no selections available
0805 - T-DES with PKA & TKE	No PC Hardware	There are no selections available
	0806 - TKE Hardware (Token Ring)	None
		0807 - Smart Card Reader
	0809 - TKE Hardware (Ethernet)	None
		0807 - Smart Card Reader
	0810 - TKE Hardware (WAC)	None
		0807 - Smart Card Reader

The first selection to be made is for the SECURITY selection to be associated with the crypto hardware. A security selection must be made in order to select any other feature. For some countries you might see Security selections shown below:

- 0811 CDMF with exportable PKA
- 0812 DES with exportable PKA
- 0813 DES with exportable PKA and TKE
- 0814 DES with PKA
- 0815 DES with PKA & TKE
- 0832 Triple-DES with exportable PKA
- 0833 Triple-DES with exportable PKA and TKE

After a Security selection indicating that a TKE is involved has been made you are allowed to select PC Hardware that is associated with a Trusted Key Entry Workstation (TKE). If there are already enough TKEs ordered for the account, you can choose not to have more hardware ordered.

A TKE Workstation may support multiple processors as well as multiple LPARs. However, remember that the TKE is a part of the specific processor order. It is not a PC but a part of the processor.

Version 2 Workstations may not be available in which case, no Smart Card Reader will be orderable.