
Technical Requirements

CCASS TERMINAL REQUIREMENTS

INTRODUCTION:

All participants can access CCASS host system through a browser-based terminal, the CCASS/3 Terminal (C3T), which will use market standard browser-based technology. All participant functions will be provided with an HTML (WindowsTM) based presentation. This will provide a user-friendly graphical interface and will reduce training needs for participants.

Participants are required to access CCASS host system by direct electronic linkage through a C3T or multiple C3Ts, to be installed at the participants' offices. Participants are responsible for obtaining their own C3Ts. They should apply for and arrange the installation of the required data communication links from the designated service provider. Participants are also responsible for all costs (for example, maintenance or otherwise) relating to their C3Ts, such as related peripherals (hub, cable) and PC software.

CCASS/3 TERMINAL SPECIFICATIONS:

The recommended PC configurations for a C3T are as follows:

Item	Descriptions
Minimum Hardware Configuration	<p>(For MS Windows XP Professional)</p> <ul style="list-style-type: none"> - Personal Computer with Intel Pentium III/500 MHz or equivalent - Memory: 128 MB - Local Hard Disk: 2 GB free space - LAN interface: Fast Ethernet card X 1 - Communication port: 1 USB port (or 1 com port is required if com port smartcard reader will be used). <p>(For MS Windows Vista Business and MS Windows 7 Professional 32-bit)</p> <ul style="list-style-type: none"> - Personal Computer with 1GHz processor or equivalent - Memory: 1GB - Local Hard Disk: 40GB with at least 15 GB of free space - LAN interface: Fast Ethernet card X 1 - Communication port: 1 USB port for smartcard reader.

Section 7.1

CCASS Terminal Requirements

Item	Descriptions																								
Software Configuration	<ul style="list-style-type: none"> - Operating System: <ul style="list-style-type: none"> ▪ MS Windows XP Professional (Chinese or English) version with Service Pack 3 (WinXP Pro SP3) or ▪ MS Windows Vista Business (Chinese or English) version with Service Pack 1 (Vista Biz SP1) ▪ MS Windows 7 Professional 32-bit (Chinese or English) version (Win7 Pro) - Browser: <ul style="list-style-type: none"> ▪ Internet Explorer 6.00 (128-bit Cipher strength) with Service Pack 2 (IE 6.0 SP2) ▪ Internet Explorer 7.0 (IE 7.0) ▪ Internet Explorer 8.0 (IE 8.0) - Java Runtime Environment (available in CCASS/3 Commissioning Website): <ul style="list-style-type: none"> ▪ JRE 6.0u10^(#1) (for WinXP and Vista Biz only) ▪ JRE 6.0u17 - Adobe Acrobat Reader (for viewing circulars, available in CCASS/3 Commissioning Website): <ul style="list-style-type: none"> ▪ Adobe Acrobat Reader 9.2 (for all the supported Operating Systems) <p>Note that since the above software are released at different times by vendors, the combinations of Operating System, Browser and Java Runtime Environment supported are illustrating in the below table:</p> <table border="1" data-bbox="536 972 1222 1178"> <thead> <tr> <th></th> <th>WinXP Pro SP3</th> <th>Vista Biz SP1</th> <th>Win7 Pro</th> </tr> <tr> <th></th> <th>JRE 6.0u10/17</th> <th>JRE 6.0u10/17</th> <th>JRE 6.0u17</th> </tr> </thead> <tbody> <tr> <td>IE 6.0 SP2</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✗</td> <td style="text-align: center;">✗</td> </tr> <tr> <td>IE 7.0</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✗</td> </tr> <tr> <td>IE 8.0</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> <td style="text-align: center;">✓</td> </tr> </tbody> </table> <p>Legend:</p> <table border="1" data-bbox="536 1240 679 1308"> <tr> <td style="text-align: center;">✓</td> <td>Supported</td> </tr> <tr> <td style="text-align: center;">✗</td> <td>Not supported</td> </tr> </table> <p>(#1) JRE 6.0u10 was formerly named as “JRE 1.6u10”</p>		WinXP Pro SP3	Vista Biz SP1	Win7 Pro		JRE 6.0u10/17	JRE 6.0u10/17	JRE 6.0u17	IE 6.0 SP2	✓	✗	✗	IE 7.0	✓	✓	✗	IE 8.0	✓	✓	✓	✓	Supported	✗	Not supported
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IE 8.0	✓	✓	✓																						
✓	Supported																								
✗	Not supported																								
Security Device	<ul style="list-style-type: none"> - Smartcard Reader: <ul style="list-style-type: none"> ▪ GemPCUSB (USB) - compatible to Win XP Pro, Win Vista Biz and Win7 Pro ▪ GemPC410 (com port) and GemPC430 (USB) – compatible to WinXP Pro only 																								
Network Device	<ul style="list-style-type: none"> - Hub and Cable: <ul style="list-style-type: none"> ▪ Only required for multi-C3T sharing one physical line ▪ One Fast Ethernet (100Mbps) Hub or Switch with 10/100 auto sense and it must support standard UTP connections (100baseT) ▪ One Category 5 standard UTP (unshielded twisted-pair) cable for each C3T (to connect the C3T to the Hub) 																								

The above information is a general reference only. Participants are advised to always rely on the document *CCASS/3 Terminal Installation Procedure*, which can be downloaded at the link <https://www.ccass.com/commissioning/download>, for the latest C3T configuration information.

DATA COMMUNICATIONS NETWORK:

The CCASS/3 WAN will ensure the reliable transmission of input between the user device and host. It will also act as broadcaster, sending simultaneous transmissions of information to all participants. The network will control the transmission of all information within CCASS system and will help to achieve the shortest possible response time even at the highest data through-put rates, ensuring fast and efficient clearing and settlement services at all time.

Participants' choice of data line speed depends on their transaction volumes, expected response time, and the costs they prepared to pay. CCASS allows participants to use single network line to support multiple C3Ts. Participants can install network lines with specific line speed based on their operational needs. Below is the recommended bandwidth of network line to support a specific number of active C3Ts:

Number of Active C3T	Recommended Bandwidth
1	128K
2 – 3	256K
4 – 7	512K
8 –14	1M
15 – 29	2M

There are 2 options for participants to set up the connection with CCASS/3 WAN:

- Option 1: Single link
- Option 2: Dual link

Based on their operational needs, participants can set up the network line(s) using either one of the 2 options. The extra line in option 2 is set up for contingency purpose – in case the main line breaks down. For option 2, network traffic will be automatically routed to the secondary link.

Section 7.1

CCASS Terminal Requirements

SMARTCARD AND SMARTCARD READER (“SC READER”) :

Access to C3T is restricted to smartcard device. A SC Reader and a smartcard are required to be installed in the participant’s C3T. HKSCC purchased both the Smartcards and SC Reader on behalf of all participants and will bill the participants for the total cost and subsequent maintenance charge.

COMPUTER VIRUS / WORM SECURITY MEASURES :

Computer virus or worms are one of the concerns in security measure of computer system. Various security measures have been employed in CCASS design to protect it from computer virus or worms attacks. Participants are reminded that their C3Ts should be dedicated solely to accessing CCASS as uncontrolled access to the Internet will expose participants’ C3Ts to various security attacks from the Internet. Besides, there are other potential sources of computer virus or worms e.g. use of external storage device with C3T for uploading or downloading CCASS information.

In view of the above, C3T users should pay attention and take proactive action to the security measures in their own C3Ts in the following two areas:

Virus protection

Participants are recommended to install anti-virus software on their C3Ts and regularly update the virus definitions from the vendor. For C3Ts not connected to the Internet, in some case, the vendor may make available the definition files daily in the Internet for download. Participants may download the updated virus definition file with a PC with Internet access, save the file in a disk or flash disk and install the update at C3T.

Microsoft OS patch

Participants are also advised to regularly review the latest Microsoft security patches and install them on their C3Ts accordingly. Participants may subscribe to Microsoft technical security notifications to keep up to date about security vulnerability and patches available: (<http://technet.microsoft.com/en-us/security/dd252948.aspx>)

For C3Ts not connected to the Internet, Microsoft security patches can be downloaded from Microsoft Download Center (or Microsoft Update Catalogue) separately with a PC with Internet access. Participants may then save the file in a disk or flash disk and install the patch at C3T.

Example Procedure:

1. Go to Microsoft Download Center: <http://www.microsoft.com/downloads> or Microsoft Update Catalogue: <http://catalog.update.microsoft.com/>
2. Search a particular security patch with the Security Bulletins Number (e.g. MS08-078) or Knowledge Base (KB) Articles number. (e.g. KB960714) that appears in the security notification.
3. Follow the instructions to download and save the file to disk or flash disk.
4. Use the disk or flash disk to install the patch on C3T. The patches may be in different formats, please follow Microsoft’s instruction to install the patches.

The below diagrams show the communication network set up under the 2 options.

Remark: Hub is not required if only one single C3T is connected to the router.

EXHIBIT 7.1A Single Link

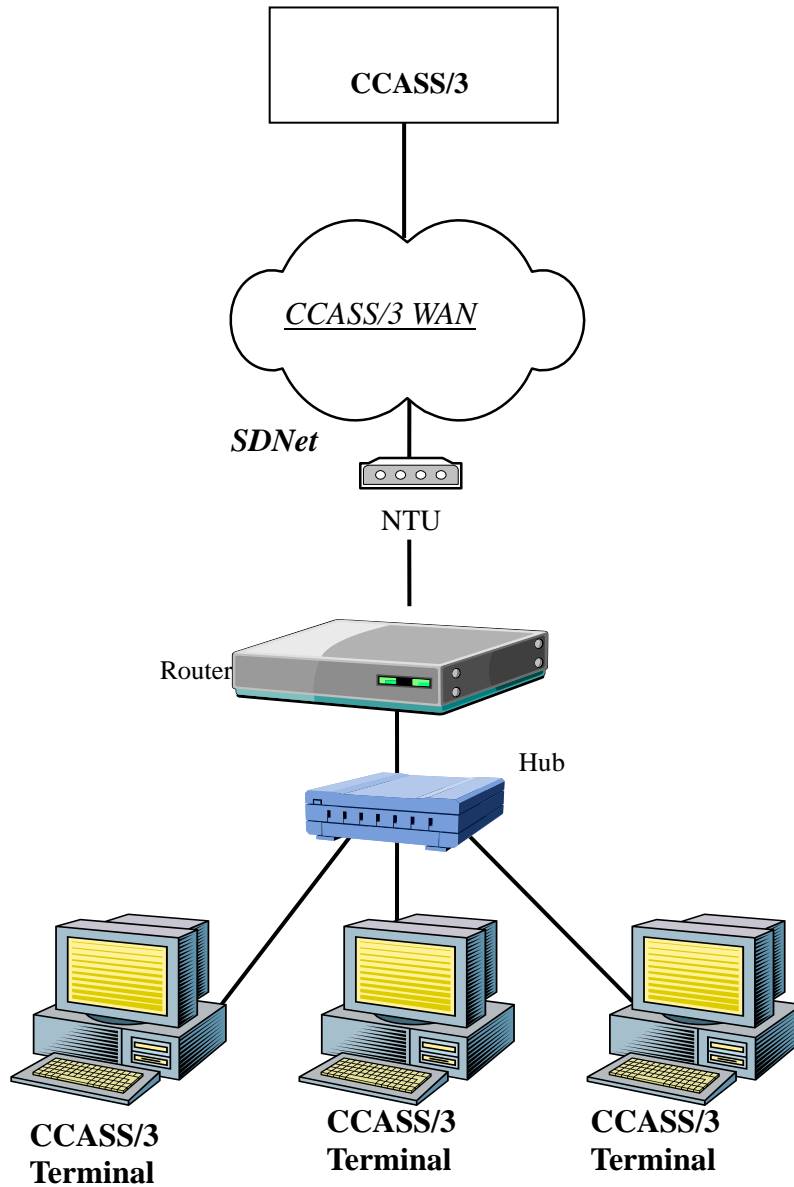
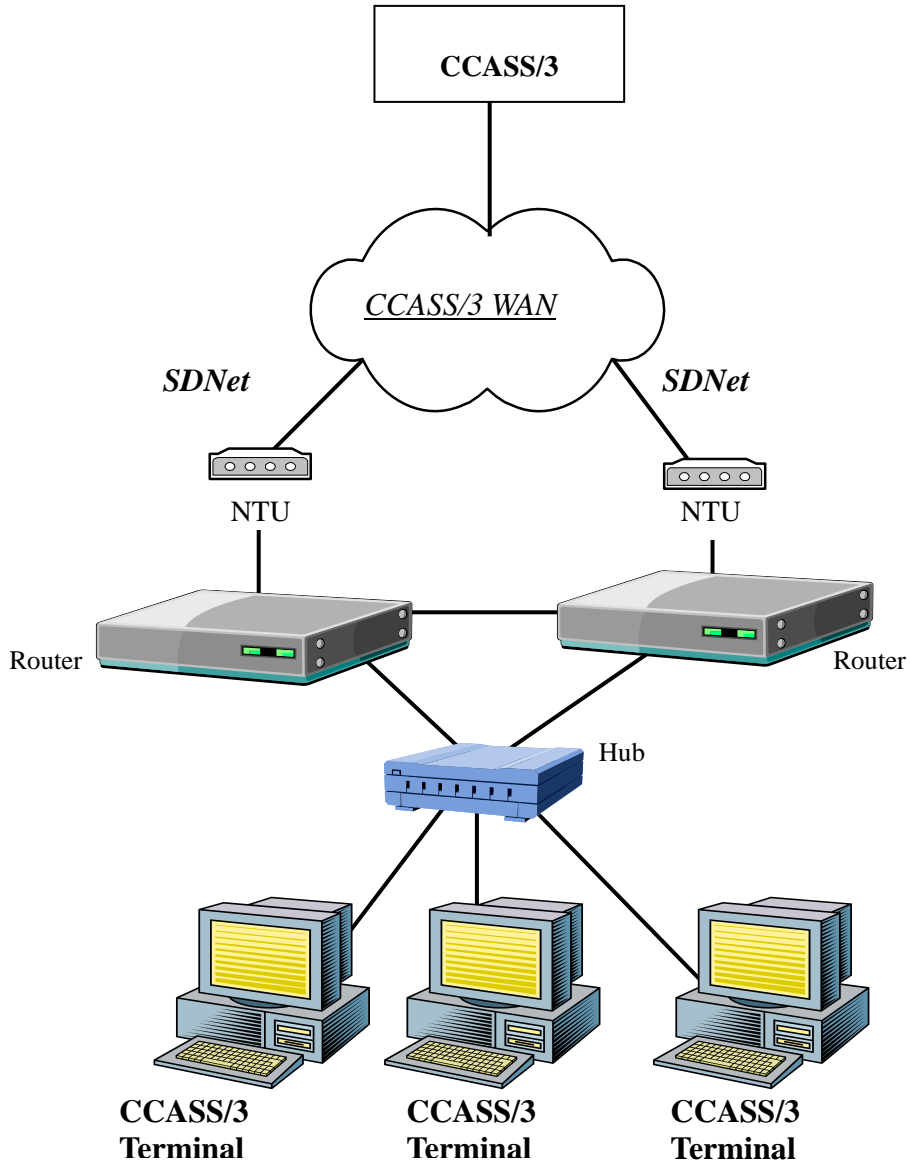


EXHIBIT 7.1B Dual Link



Central Clearing and Settlement System (CCASS)

External Interfaces Schematic

