



Gestionnaire
du Réseau de Transport d'Electricité

Access to RTE's IT system with digital certificates under Microsoft Windows XP

PKI User Manual

Version3, 4/11/2008

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1. Introduction

1.1 Document subject

This document is intended for the end user who wishes to access the RTE's IT system with digital certificates.

This current document allows certificate holders to:

- know how to install and use their digital certificates in the following environments:
 - Windows XP,
 - Browsers: Mozilla Firefox and Internet Explorer for secure access using the HTTPS protocol,
 - Email clients: Mozilla Thunderbird, Outlook 2000/XP/2003 and Outlook Express for secure communications in the S/MIME format,
 - Lotus Notes: please refer to the following reference document "PKI User Manual - digital certificates - Windows XP Notes";
- understand the context and the principles of a secured environment, as well as the general operation of a public key infrastructure (IGC, or PKI in English).

NOTE

Throughout this document, the pronoun "you" is used to reference the certificate holder. References to he/him/his/himself are for brevity and are also implied to refer to she/her/hers/herself wherever they occur.

1.2 Context

In the context of the February 10th 2000 legislation (2000-108) and the implementing decree 2001-630 of July 16th 2001, the administrator of a public transport network has an obligation to protect the confidentiality of all information of economic, commercial, industrial, financial or technical natures whose communication might adversely impact the rules of free and fair competition and non-discrimination as defined by the law.

1.3 A warning concerning security procedures

Each holder of a digital certificate uses a cryptographic module to maintain their own securely-generated private key on the hard drive of their workstation. Therefore, every digital certificate holder must take the necessary precautions to prevent:

- the breach of their private key;
- the loss of their private key;

- the disclosure of their private key;
- the modification of their certificate;
- and any abusive use of their certificate.

Every certificate holder has, and recognises having, complete responsibility for the protection of their private key(s). The private keys and their associated certificates are stored on the hard disk, hence their being known as "digital" certificates; these private digital keys can be protected by a password only known by the certificate holder.

The Certification Authority (CA) of "RTE France" declines all responsibility relating to litigation arising or associated with inappropriate use of these private keys.

Please refer to:

- chapter 2 of the ***Certification Policy of the RTE France CA***, which is found in the package that has been supplied to the company manager:
<PACKAGE>:\RTE Installation\fr\Politique de Certification RTE.pdf
- the ***IT System access regulations***.
<PACKAGE>:\Sécurité - Charte d'utilisation des certificats logiciels.pdf

1.4 The stakeholders

Certificate lifecycle management revolves around three entities:

- the customer (*i.e.* your company);
- The Registration Authority (RA);
- The Certification Authority (CA).

NOTE

To make things easier to understand, an analogy can be made with the allocation of official identity documents: a citizen requesting an identity document corresponds to the customer entity, the municipality acts as the registration authority, and the central Internal Affairs department as the certification authority.

1.4.1 The customer

The customer makes certificate requests on behalf of the certificate holders. The customer can similarly issue requests for revocation of its certificates.

1.4.2 The Registration Authority (RA)

The Registration Authority (the RTE customer relations officer for the Operator's team) receives a certificate request and verifies the identity of the certificate holders who will be using the certificates.

1.4.3 The Certification Authority (CA)

The (RTE) Certification Authority is responsible for and vouches for the certificates signed in its name and for the smooth operation of the PKI. It defines its own policies for the administration and usage of its certificates.

The RTE certification authority is defined as:

CN = RTE Autorite de Certification, O = RESEAU DE TRANSPORT D
ELECTRICITE

1.5 The certificate management process

The principle processes implemented to manage the combined collection of digital certificates delivered to certificate holders are as follows:

- the issuance of a certificate (issuance of one or more certificates),
- the renewal of a certificate (replacing someone's certificate with a new one for a new validity period and for a new key pair,
- the revocation of a certificate.

The RTE's certification policy is available on the RTE corporate internet site.

1.5.1 Issuance of a certificate

Certificates are issued in compliance with the RTE Certification Policies upon the initiative of the representative of the company for contractual relationships with RTE.

The requests are issued by the customer through its RTE customer relations officer, who forwards them to the appropriate groups to register the certificate holder. Then the certificate holder himself registers on the site assigned for digital certificates. After that, the browser generates a key pair on the certificate holder's workstation and downloads the associated certificate.

1.5.2 Renewal of a certificate

Forty days before the expiry of a certificate, an electronic message is sent to the certificate holder to inform him of the renewal of his digital certificate.

If modifications need to be made relating to the certificate holder's details, then the certificate holder's representative contacts the RTE customer relations officer to tell him what those changes are.

Otherwise an email is sent to the certificate holder with the information necessary for the retrieval of his new certificate.

1.5.3 Revocation of a certificate

For scenarios involving a change of the certificate holder, loss or a compromised certificate, the customer directly contacts the RTE Hotline (see §10.2) to request the revocation of that certificate. The customer will be notified of the revocation of that certificate. The revocation request may originate from RTE itself in the event of fraud.

2. Installation and configuration of the workstation

All operations in this chapter are to be performed just once by computer staff with Administrative privileges over your workstation when you receive your RTE applications access kit.

In addition, note that **only a few chapters of this manual are of interest to the certificate holder**: those being the chapters relating to digital certificates.

2.1 Network configuration

Electronic messages (emails) passing between RTE and the certificate holder will be transported over the Internet (SMTP protocol, S/MIME format).

Access with web a browser employs – quite transparently to the certificate holder – an access authentication system for the RTE portal and encryption of data communicated over the Internet (HTTPS protocol).

IMPORTANT NOTE

The messaging and antivirus routers, firewalls and content analysers must be configured to not alter or refuse encrypted and signed messages in S/MIME format (application/x-pkcs7-mime, .p7s, .p7m), nor to block HTTP data traffic (port 443).

The network administrator can be consulted to perform these operations

2.2 Software configuration

The software configuration required for your workstation is as follows:

Operating systems:

- Windows XP,

Web browsers:

- Mozilla Firefox 1.5 or later,
- Internet Explorer 6.0 or later,

Email software:

- Mozilla Thunderbird 1.5 or later,
- Outlook 2000, XP and 2003,
- Outlook Express 6.0 or later,
- Lotus Notes 5 or later.

NOTE

Generally speaking, reading messages over a webmail type interface does not permit messages to be signed.

Microsoft software updates for 128-bit encryption

If you are not aware what these updates consist of, please contact your Windows system administrator so that he can perform the necessary tasks. Listed below are the web addresses for these updates as well as the path locations for them in the package supplied by RTE.

Outlook 2000:

Office 2000 Update: Service Pack 3 (optional)

<PACKAGE>\Windows Updates\Outlook 2000\Service Pack 3 (SP3)\

Office 2000 FR

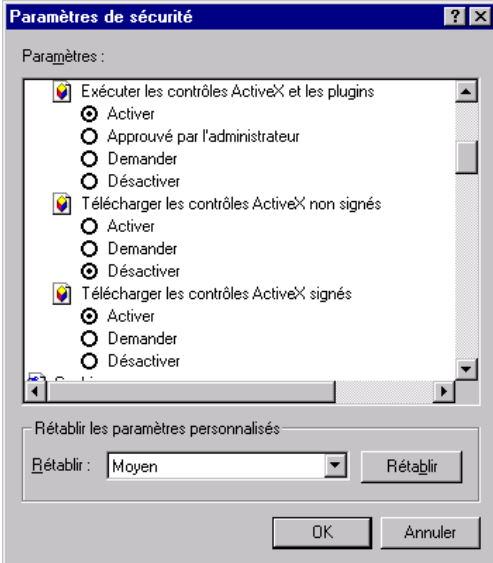
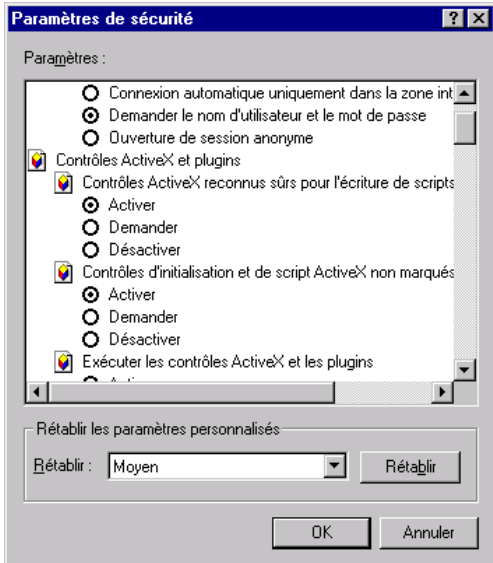
<PACKAGE>\Windows Updates\Outlook 2000\french-configuration.reg

IMPORTANT

In order to retrieve your software certificate, you will need administration rights on your workstation.

During the retrieval of your certificate under Internet Explorer, two ActiveX controls are downloaded to your workstation, one from the "ConfigChkr" class (which verifies the cryptographic configuration of the browser) and "Cenroll" for the download itself. The network administrator must make sure that these ActiveX controls will not be blocked by network security measures.

In addition, Internet Explorer must be configured to accept the download and execution of signed ActiveX controls: Open the menu item "Tools > Internet options...", the "Security" tab, and click on the "Personalise the level..." button:

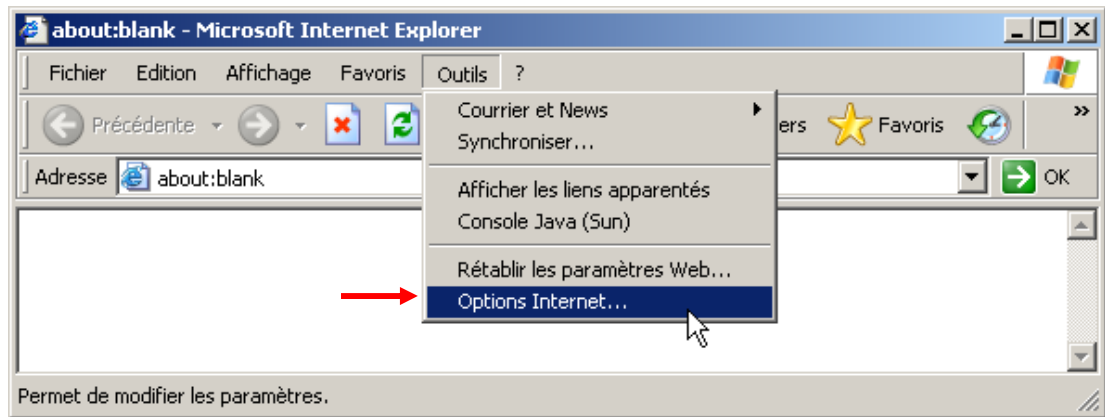


3. Internet Explorer 6

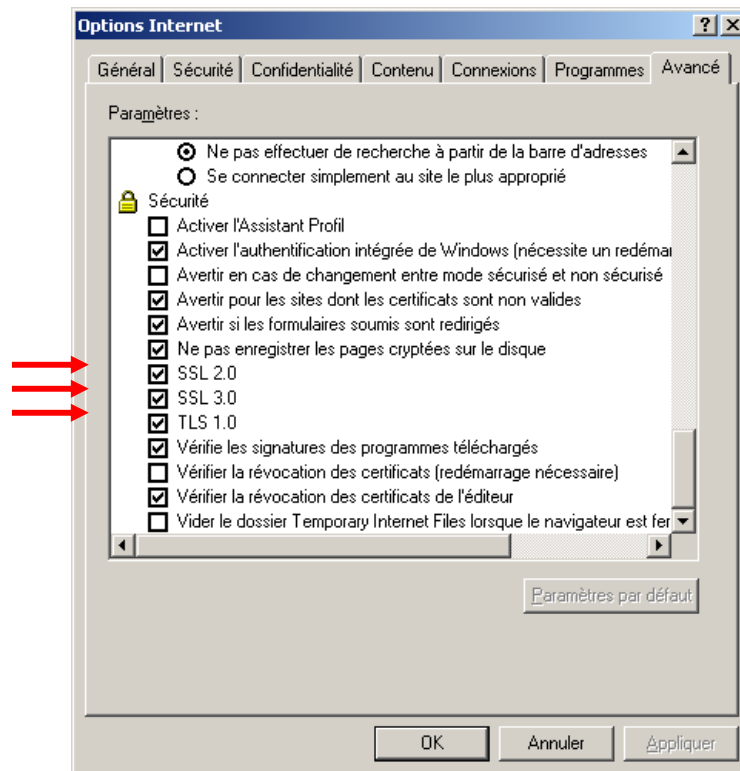
3.1 Configuration for SSL/TLS protocols



In the browser, select the "Tools > Internet options..." menu item:



Select the "Advanced" tab:



In the section labelled "Security", makes sure that checkboxes for SSL 2.0, SSL 3.0 and TLS 1.0 have been checked, as shown above.

3.2 Request for a digital certificate

3.2.1 Preliminary measures

The following steps must have been completed in advance:

- **The company representative has made an access request:**

The company representative must have filled out and signed the "RTE IT System and Applications Access Request Forms"; and must have sent them to the RTE customer relations officer:

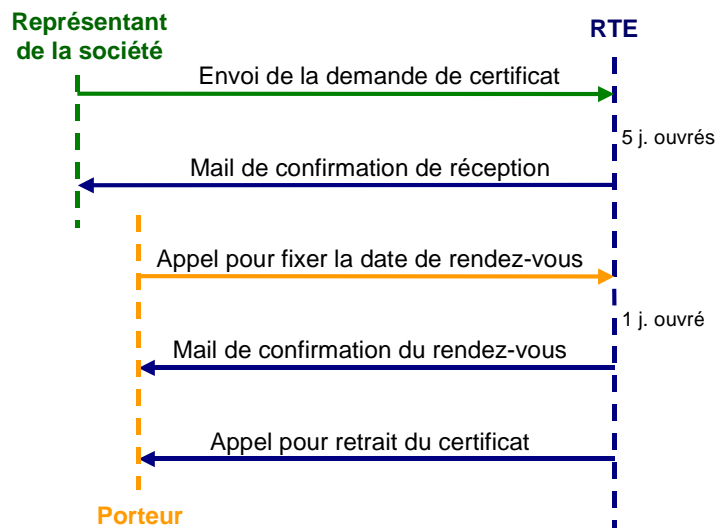
- **We have registered your request:**

Upon reception of those forms, we will have created your application access account(s).

3.2.2 Overall schematic

Once the certificate request has been registered and validated by our services (within 5 working days), a message will be sent to the company representative to acknowledge receipt of the forms and asking him to call us to fix a phone meeting with the certificate holder for the day of the certificate installation.

Then, a message will be sent to the certificate holder after this call, reminding him of the scheduled meeting and giving him the address of the download web site and the retrieval code which will allow him to download his certificate from his own workstation.



The certificate holder must then connect to the digital certificate administration web site from his workstation to fill out and validate the registration form online. At that moment, a key pair will be generated on his workstation and his certificate will be downloaded.

3.3 Installation of the RTE CA root certificate

3.3.1 Download and installation

The RTE root certificate must now be installed in your browser so that RTE is known as the trusted Certification Authority.

To do this, please navigate to the RTE customer site at the following address:

<http://rte.certplus.com/default.htm>

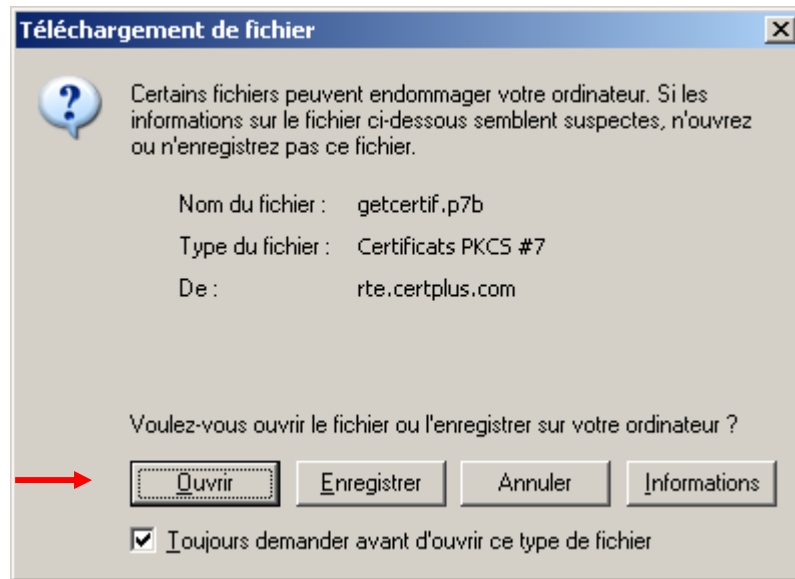
The following page will be displayed.



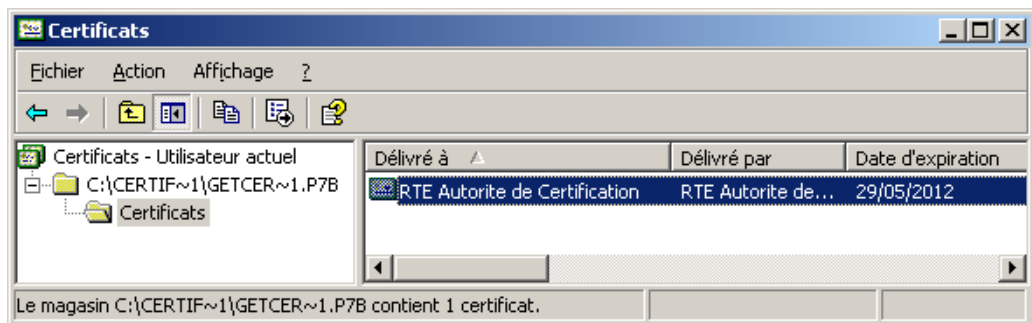
Click on the link "**Installer le certificat racine de RTE / Install the RTE root certificate**"

The RTE CA root certificate will then be installed in the Windows certificate store, as per the process described below.

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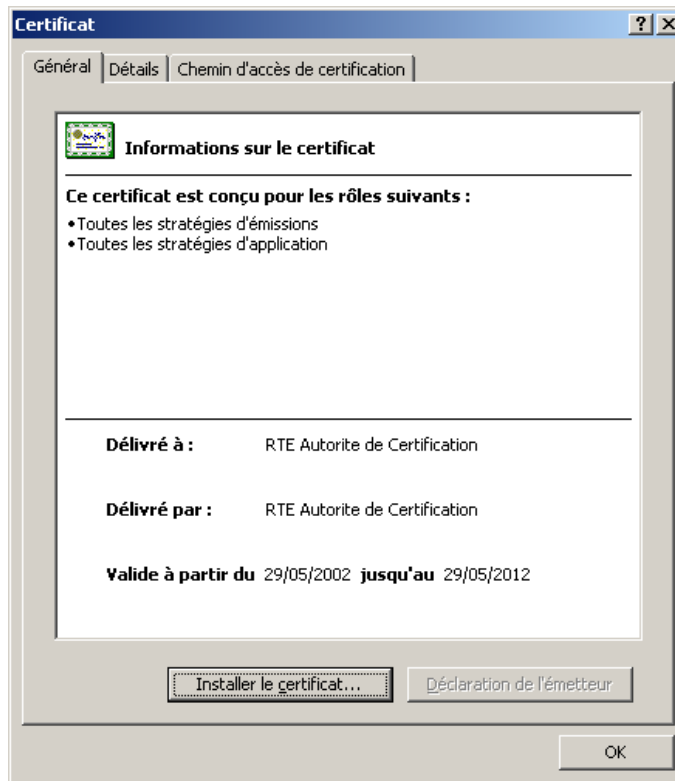


Click on the "Open" button.

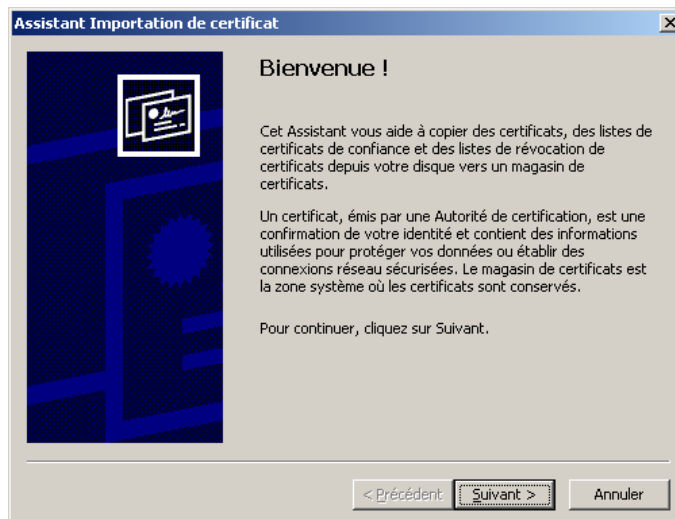


Double-click on "RTE Autorite de Certification (RTE Certification Authority)".

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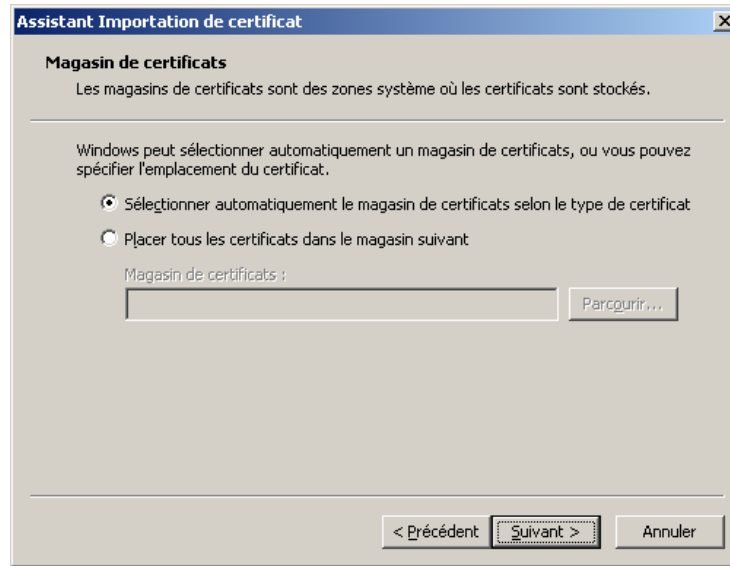


Click on the "Install the certificate" button.

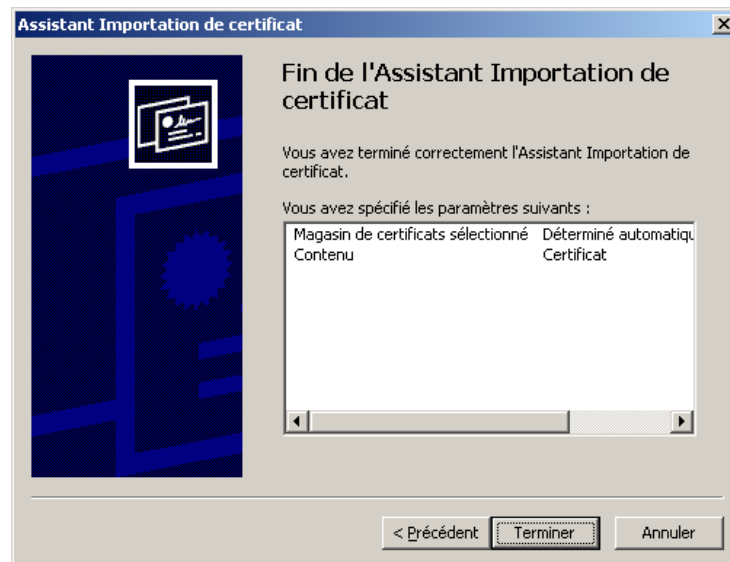


Click on "Next".

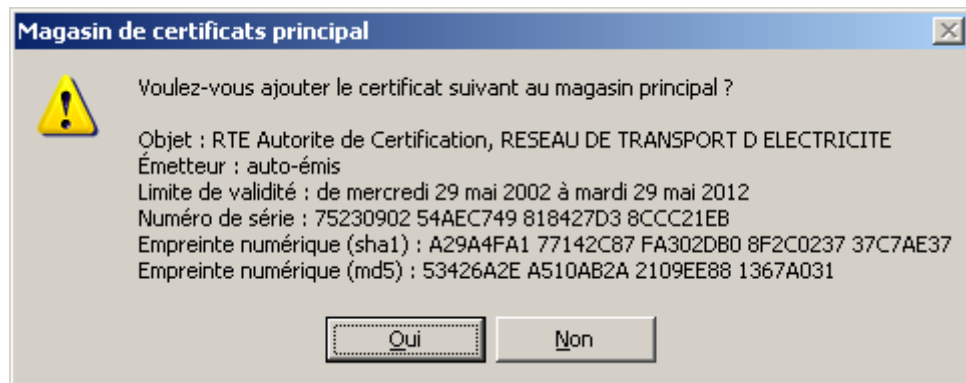
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Leave the selected default option as it is and click on "Next".



Click on "Finish", and the following window then displays the contents of the root certificate to be imported.



3.3.2 Verification of the root certificate fingerprint

To make sure that you have downloaded the genuine RTE AC root certificate, carefully check that the "**SHA1**" or "**MD5**" digital fingerprint displayed in the window shown is **identical** to that shown above.

The **root certificate digital fingerprints** for RTE CA are listed here:

SHA1 A29A 4FA1 7714 2C87 FA30 2DB0 8F2C 0237 37C7 AE37

MD5 53:42:6A:2E:A5:10:AB:2A:21:09:EE:88:13:67:A0:31

If the hash fingerprint is not identical, click on "**No**" and contact our support services.

If it is identical, click on "**Yes**" to finish the import.

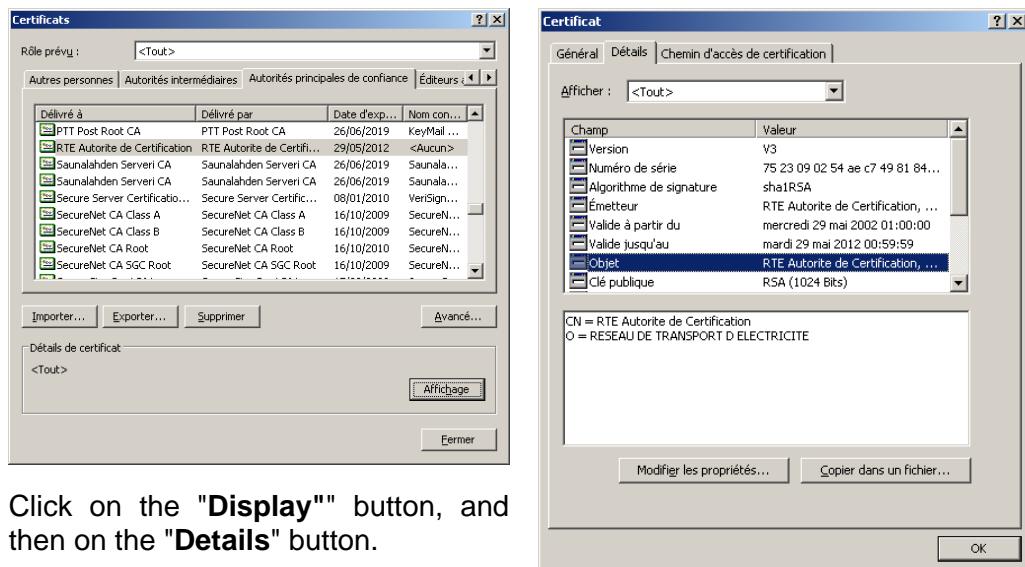


Click on "OK".

3.3.3 Contents of the RTE CA certificate

The root certificate that you have just downloaded is stored in the certificate store appropriate to the browser used. For example, it can be viewed in Internet Explorer with:

Menu "**Tools > Internet options...**", "**Contents**" tab, "**Certificates...**" button, "**Trusted root authorities**" tab:

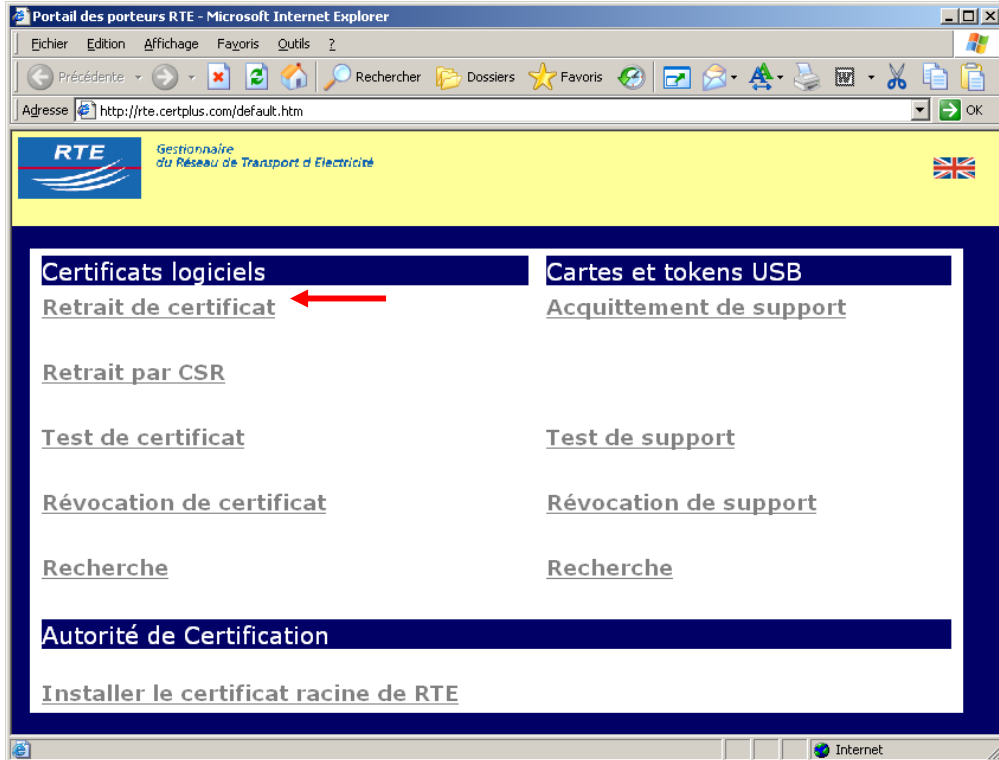


Click on the "**Display**" button, and then on the "**Details**" button.

3.4 Downloading your certificate

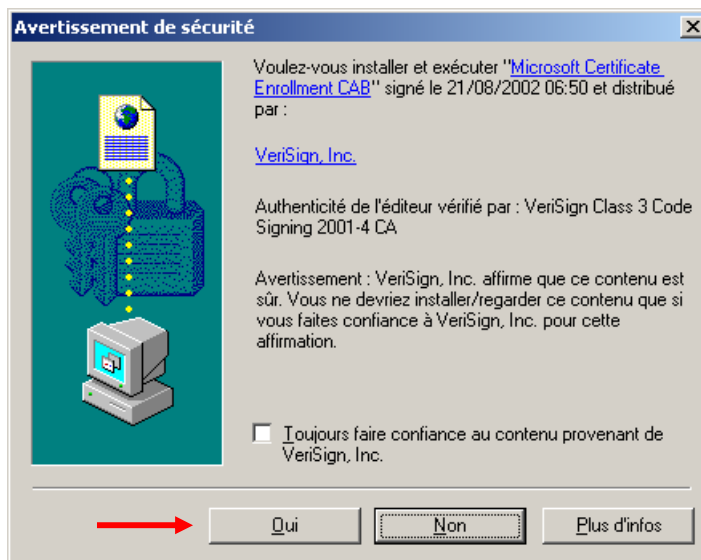
To create your key pair and your certificate, you must then connect, on the RTE meeting day specified, to the following web site:

<http://rte.certplus.com/default.htm>



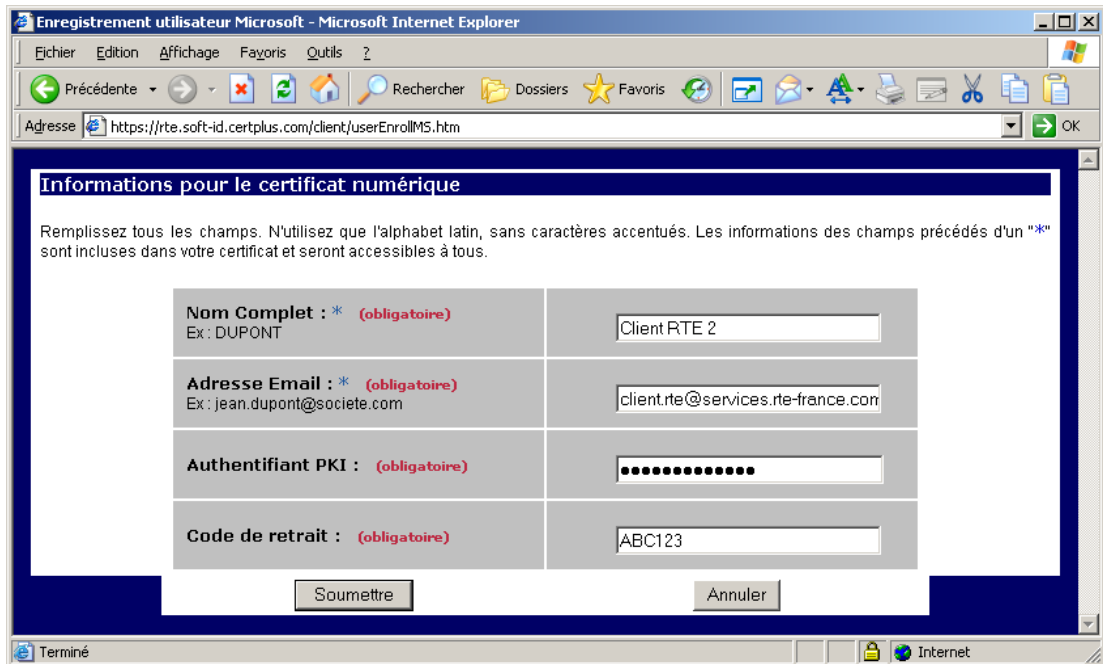
Click on the "**Retrait de certificat / Retrieve the certificate**" button.

It is possible that the following dialogue box might be displayed:



If it does, reply with "**Yes**" to make sure you have the correct encryption mechanism (key size) installed.

Fill out the following form:



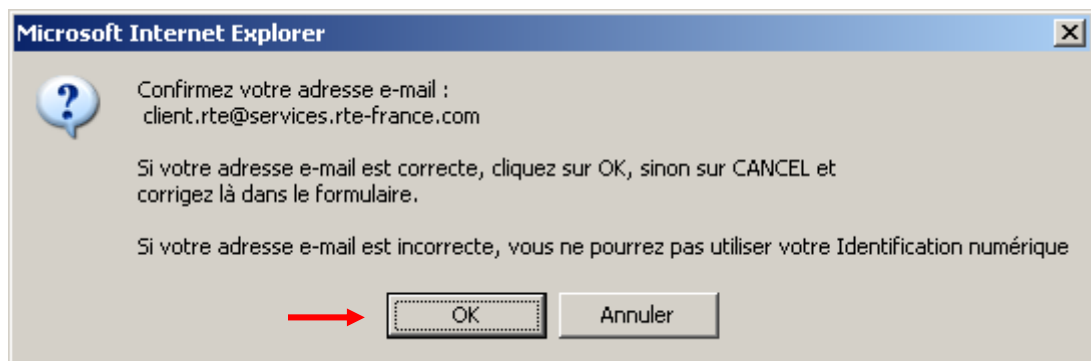
The fields marked with an asterisk must be completed **without diacritic marks** (i.e. accents, cedillas, ...) **or punctuation marks**; as they would also appear in the certificate that will be generated.

The **retrieval code** is the code supplied in the 2nd email that you received from us which allows you to authenticate yourself. To make things easier, you can do simple copy-paste commands to enter the data.

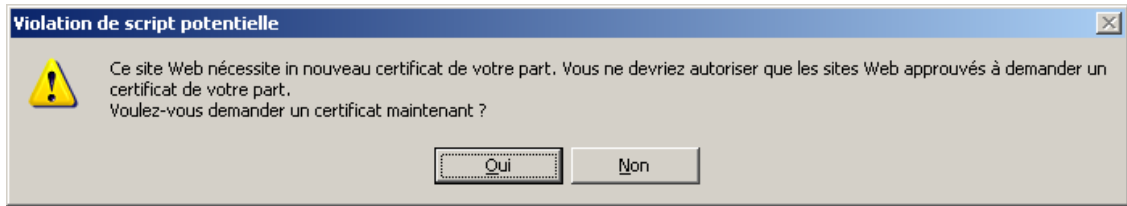
You must likewise enter your **Authentifiant Utilisateur PKI (PKI User Credentials)**, just as they were supplied in the RTE IT system access technical specifications; they will serve to authenticate you with the RTE Hotline any time that you contact them.

Lastly, click on "**Submit**" to send your request for the digital certificate.

A dialogue box will ask you to confirm your email address:



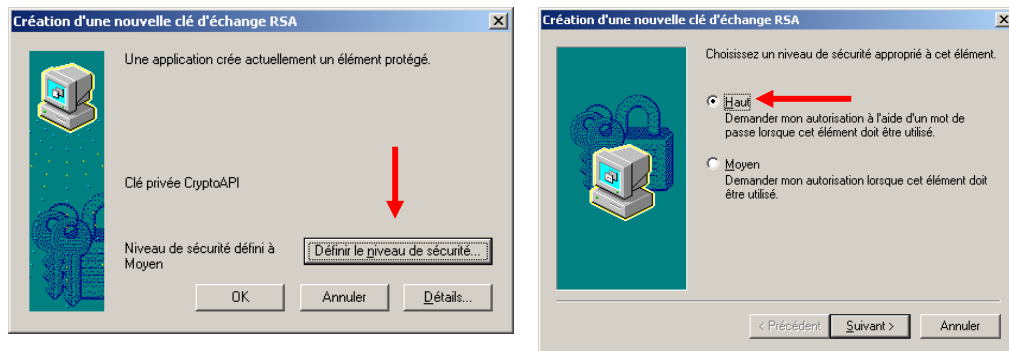
Click on the "**OK**" button, or "Cancel" to return to the form data entry screen.



Click on the "Yes" button.

3.4.1 Generation of the key pair

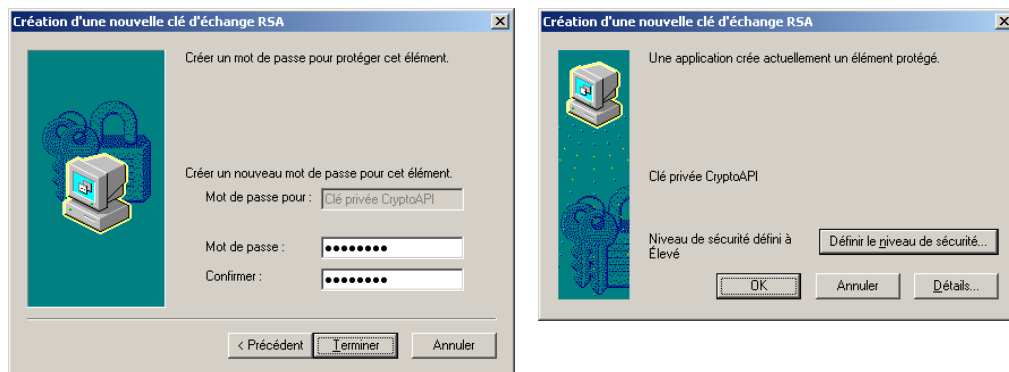
The dialogue box shown below will then be displayed, indicating that an RSA key pair has been created by Internet Explorer on your workstation:



Click on the "Define the security level" button. Select the "High" option, then click on "Next".

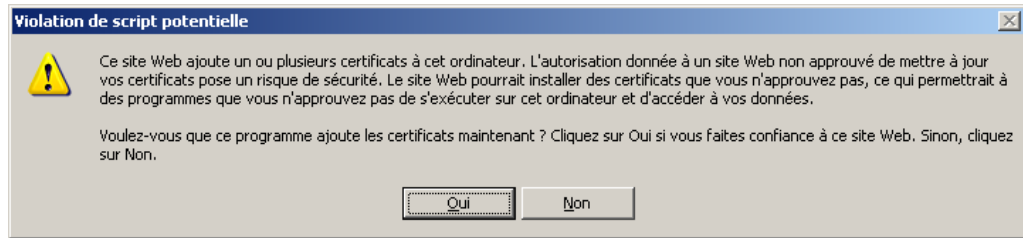
The key pair that will be generated is, by default, at a "medium security" level, which means that each later use of this key pair will cause the display of a simple acknowledgement message: the certificate holder is also warned of this usage but no password is requested.

For protected use of your key pair, which we recommend, you should rather choose "high security", which will mean that a password, that you will choose here, will be asked of you for every later use of your key pair. The screens below describe the procedure to set this security level.



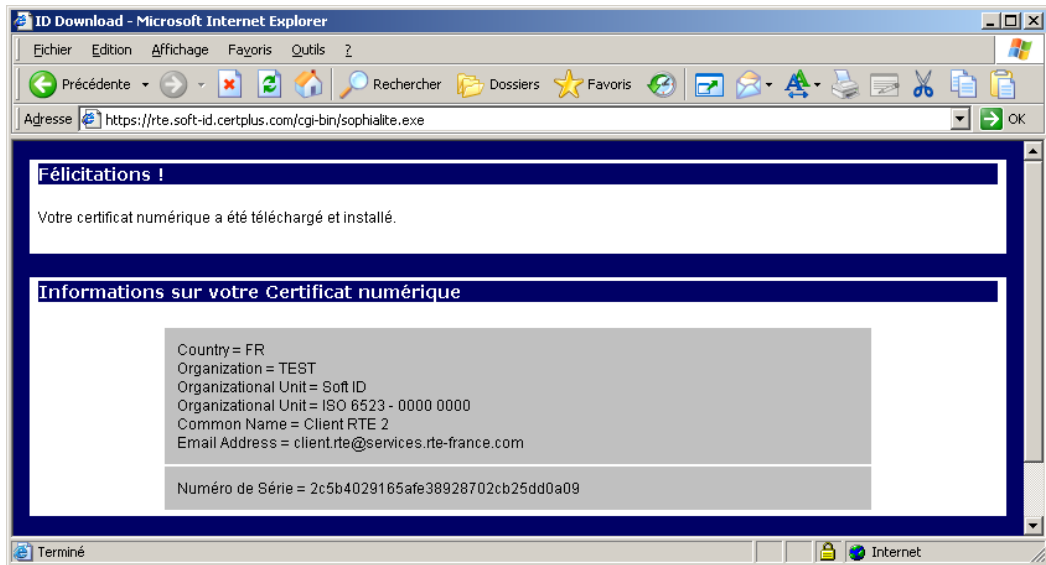
Enter a password, then click on the "Finish" button. Click on the "OK" button.

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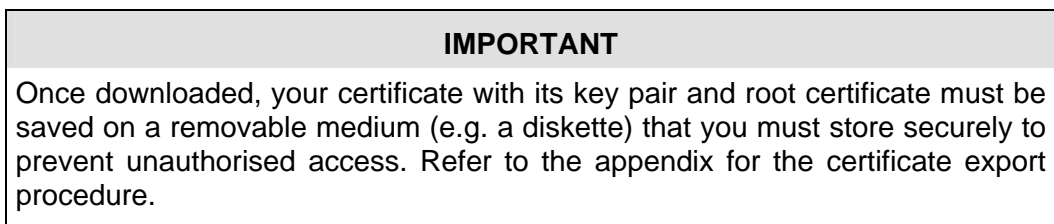


Click on the "Yes" button.

3.4.2 Installation of the certificate



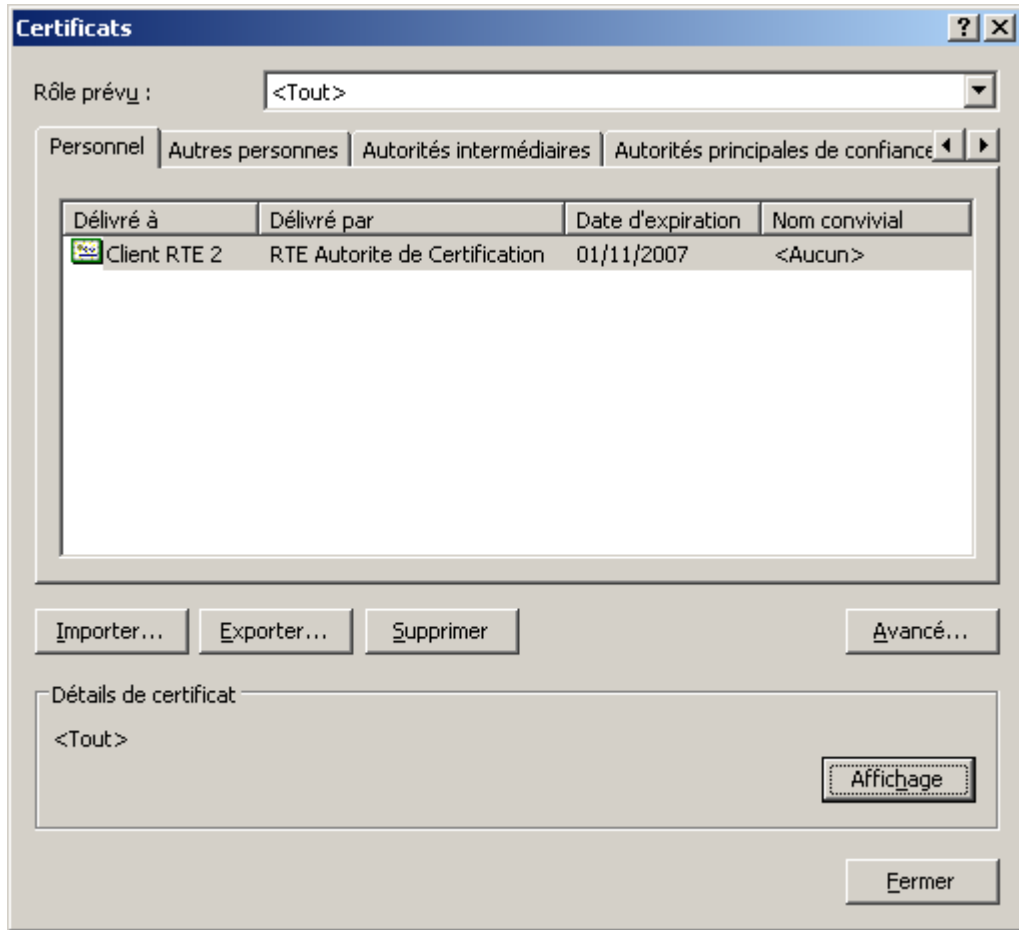
Next, the certificate is automatically downloaded and installed in the Internet Explorer certificate store. The page opposite is displayed to indicate the end of this process.



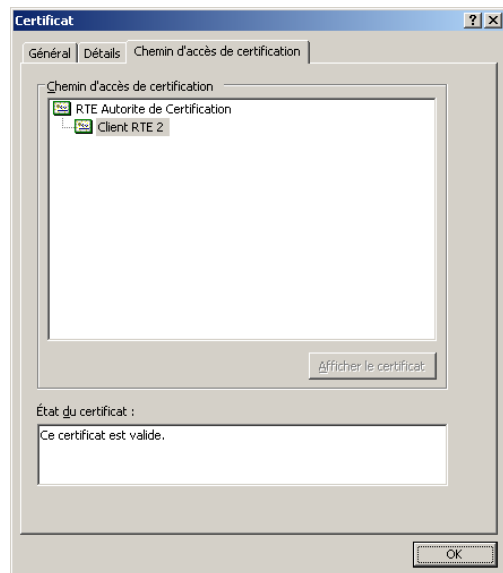
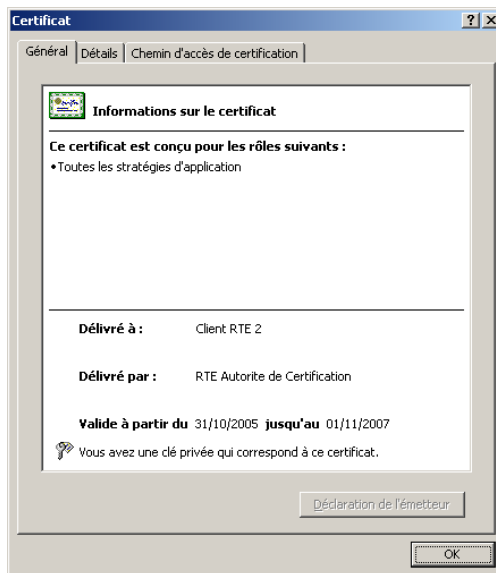
3.4.3 Contents and verification of your digital certificate

Regardless of the browser used, the contents of the downloaded certificate will obviously be the same, only the presentation of the information on the screen will vary. For downloads with Internet Explorer, open the certificate store with the following menu choices:

"Tools > Internet options...", "Contents" tab, "Certificates..." button:



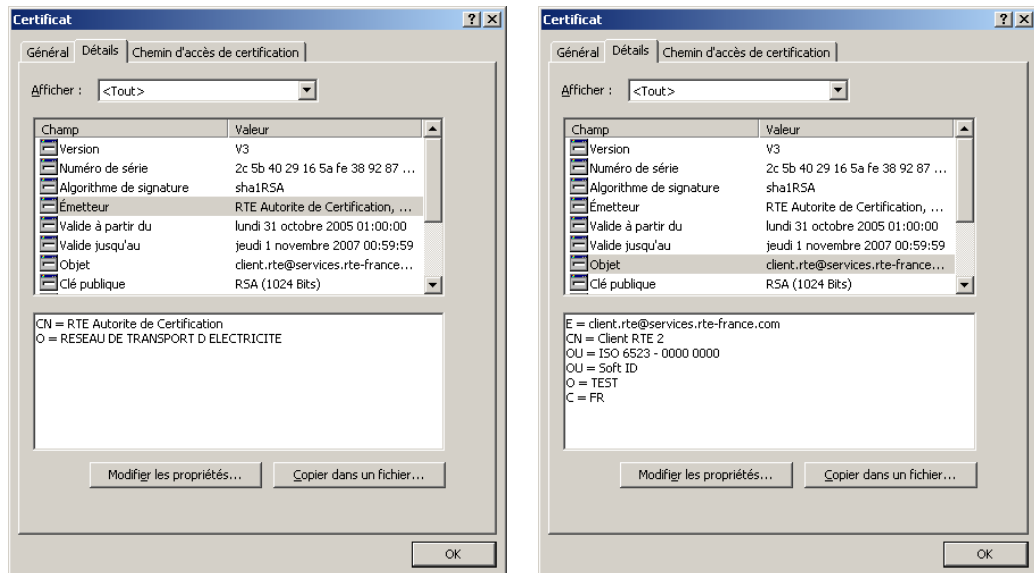
Select your certificate, then click on "Display".



It is valid for 2 years from the download date.

This tab allows you to verify your certificate.

The "valid" status of your certificate, as well as the complete display of the certificate access path (2 levels), shows that your certificate has been correctly installed along with the root certificate, and therefore all the correct usage conditions for your certificate have been satisfied.



3.5 Usage in your browser

3.5.1 Authentication and encryption

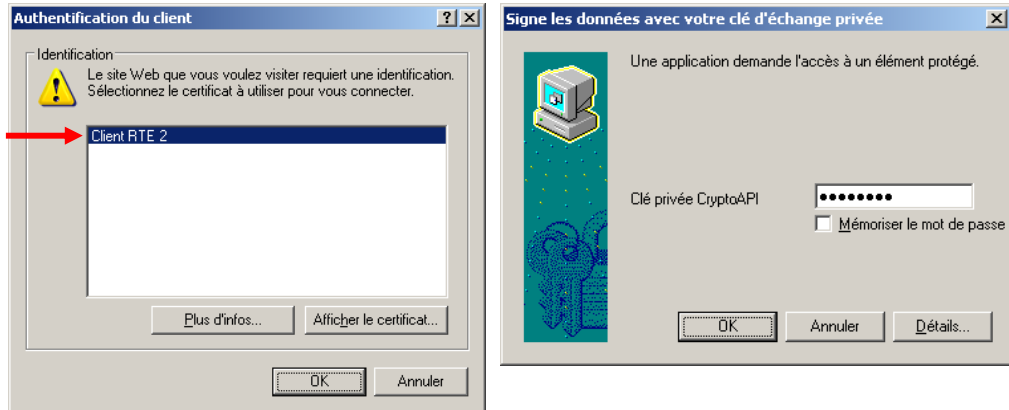
Steps to follow:

- Start Internet Explorer;
- Enter the URL for the RTE application or for the "RTE Customer Services Portal" (this URL starts with "https://");
- During authentication, the browser will ask you to choose the certificate before attempting to authenticate you, and then prompt for the certificate store security password;
- If several certificates are offered to you, you should choose the one that was supplied to you for the application which you are currently attempting to access (use the "Display the certificate" button to look at their contents);
- Now all the data that you send and receive will be encrypted.

3.5.2 Example of accessing the "RTE Customer Services Portal"

Whenever you access the welcome page with "https" as the prefix, you will have to select your certificate:

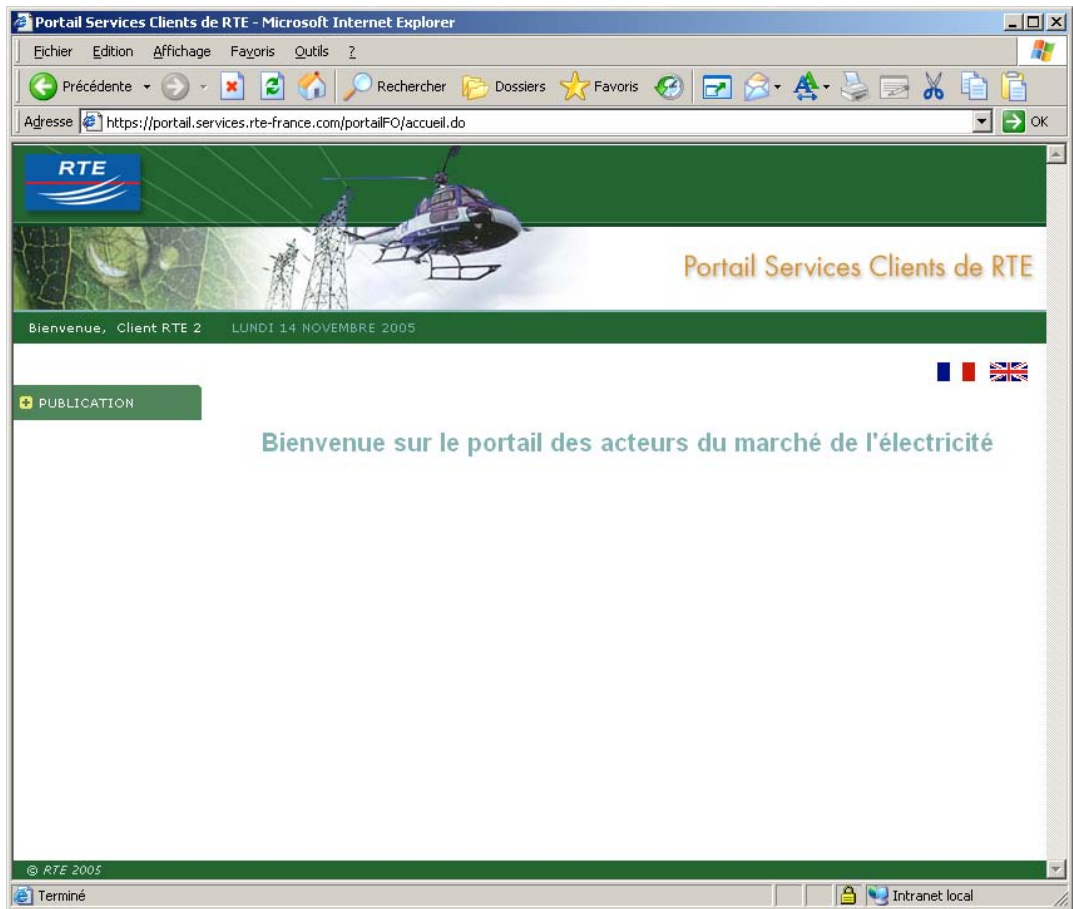
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The "Display the certificate..." button allows you to look at the contents of the selected certificate, then click on "OK".

If necessary, this window will ask you for the store password for your certificate.

The welcome page will then be displayed in a secure setting:

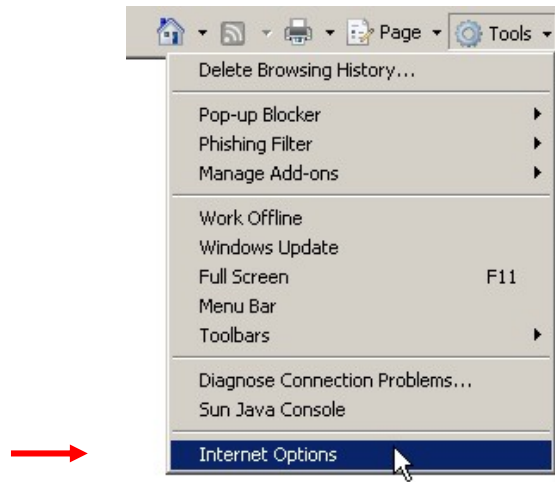


4. Internet Explorer 7

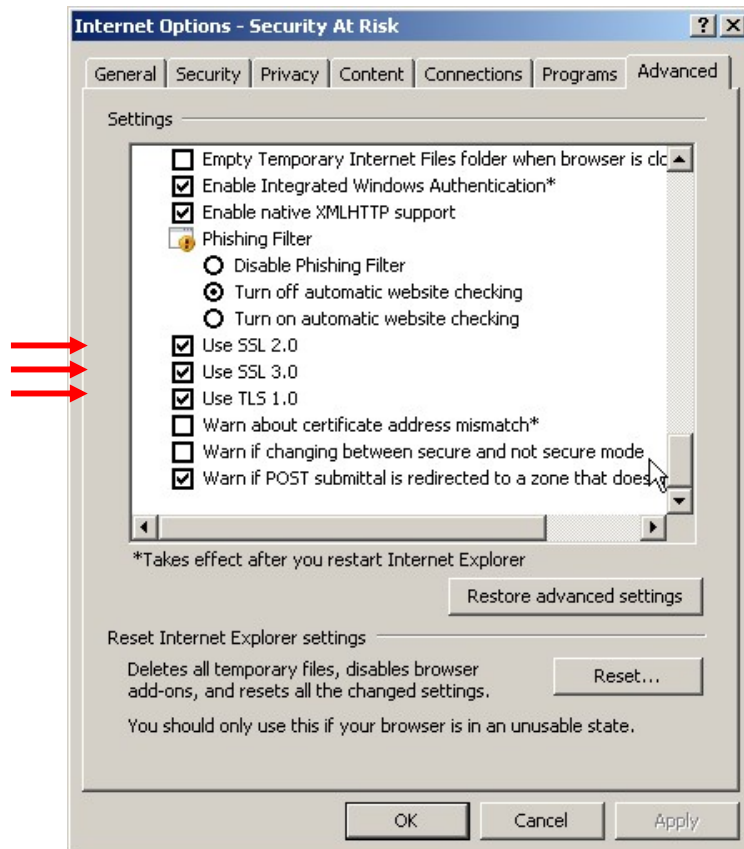


4.1 Configuration for SSL/TLS protocols

In the browser, select the **"Tools > Internet options..."** menu options:



Select the **"Advanced"** tab:



In the section labelled **"Security"**, makes sure that checkboxes for SSL 2.0, SSL 3.0 and TLS 1.0 have been checked, as shown above.

4.2 Request for a digital certificate

4.2.1 Preliminary measures

The following steps must have been completed in advance:

- **The company representative has made an access request:**

The company representative must have filled out and signed the "RTE IT System and Applications Access Request Forms"; and must have sent them to the RTE customer relations officer:

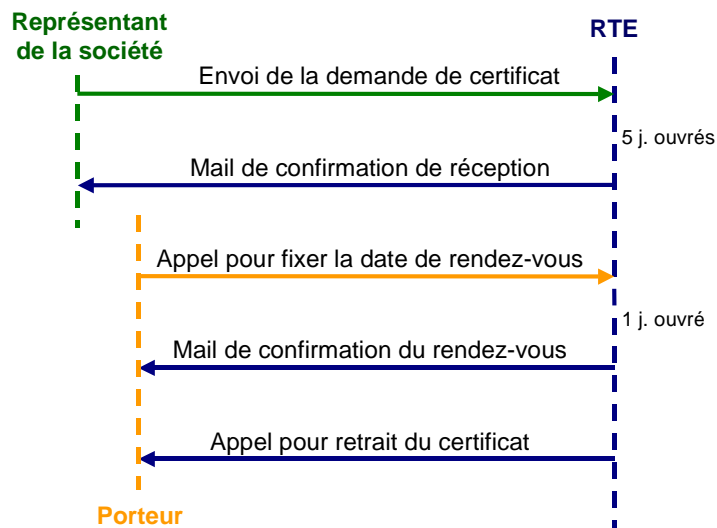
- **We have registered your request:**

Upon reception of those forms, we will have created your application access account(s).

4.2.2 Overall schematic

Once the certificate request has been registered and validated by our services (within 5 working days), a message will be sent to the company representative to acknowledge receipt of the forms and asking him to call us to fix a phone meeting with the certificate holder for the day of the certificate installation.

Then, a message will be sent to the certificate holder after this call, reminding him of the scheduled meeting and giving him the address of the download web site and the retrieval code which will allow him to download his certificate from his own workstation.



The certificate holder must then connect to the digital certificate administration web site from his workstation to fill out and validate the registration form online. At that moment, a key pair will be generated on his workstation and his certificate will be downloaded.

4.3 Installation of the RTE CA root certificate

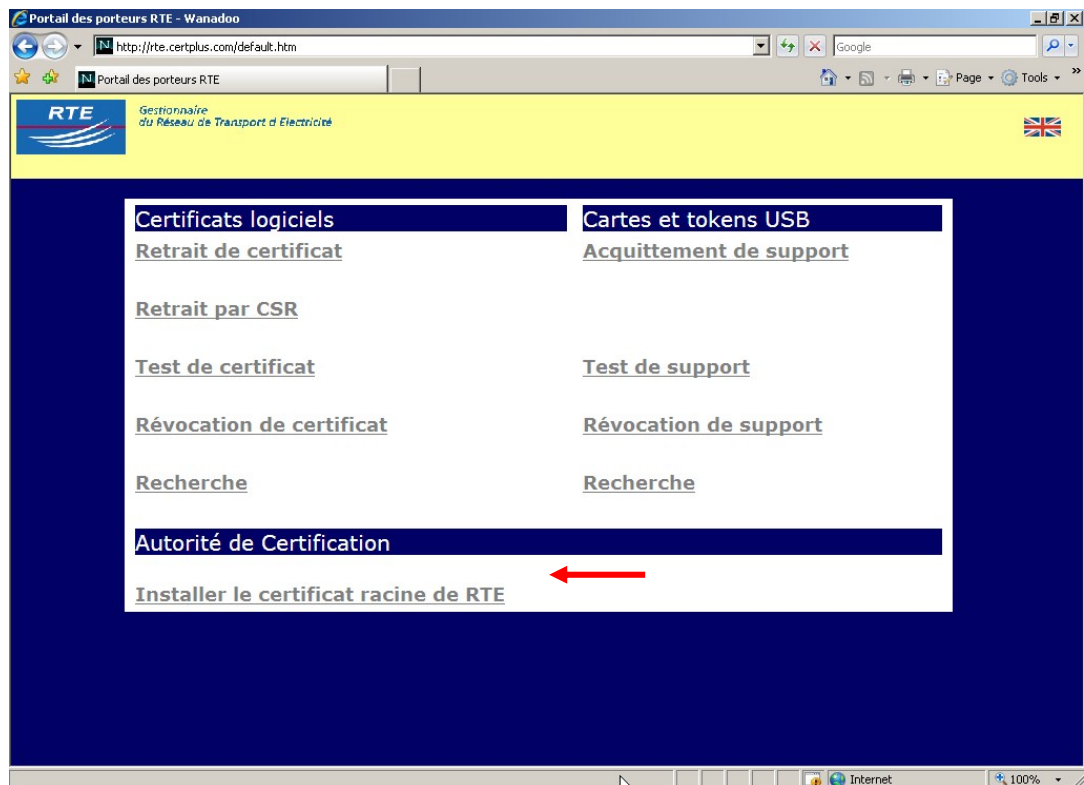
4.3.1 Download and installation

The RTE root certificate must now be installed in your browser so that RTE is known as the trusted Certification Authority.

To do this, please navigate to the RTE customer site at the following address:

<http://rte.certplus.com/default.htm>

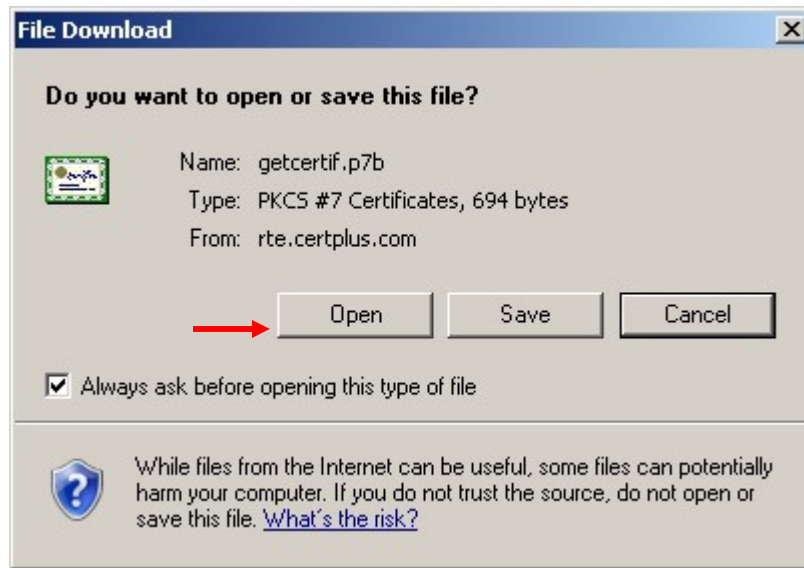
The following page will be displayed.



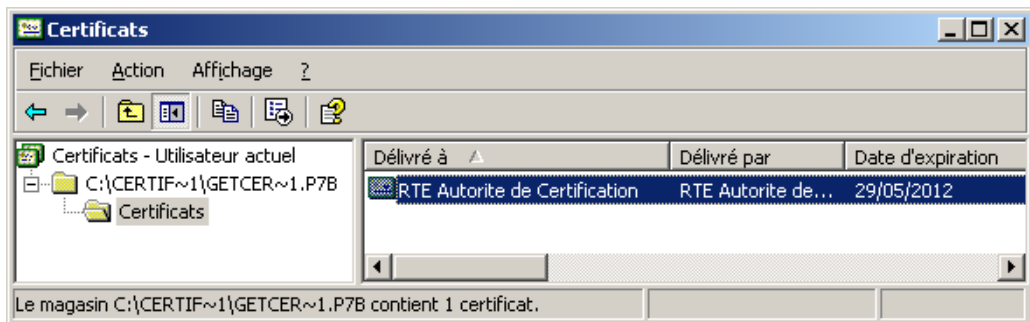
Click on the link "**Installer le certificat racine de RTE / Install the RTE root certificate**"

The RTE CA root certificate will then be installed in the Windows certificate store, as per the process described below.

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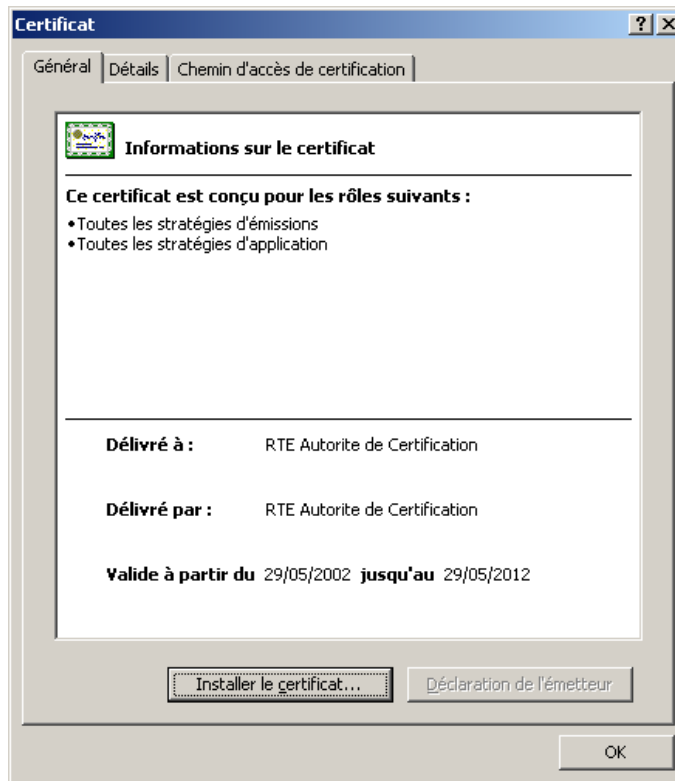


Click on the "Open" button.

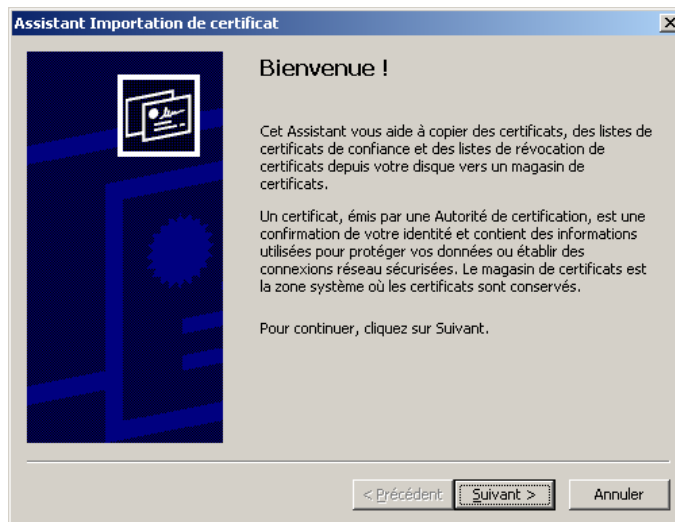


Double-click on "RTE Autorite de Certification (RTE Certification Authority)".

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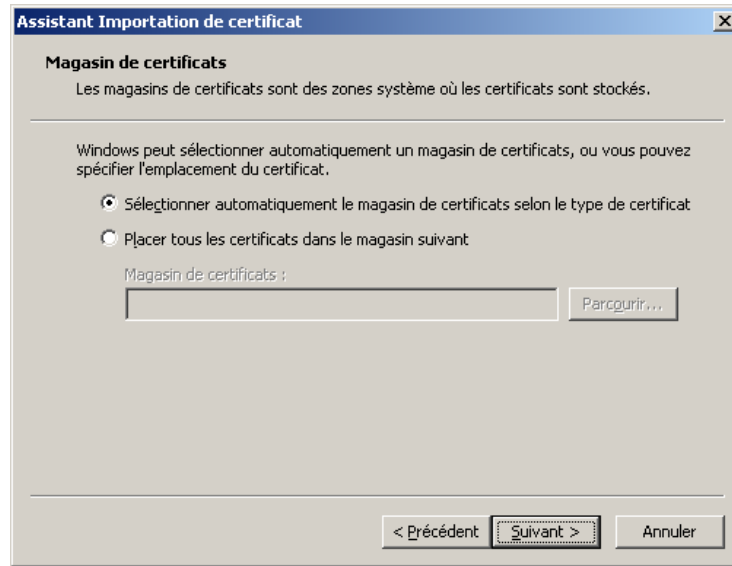


Click on the "Install the certificate" button.



Click on "Next".

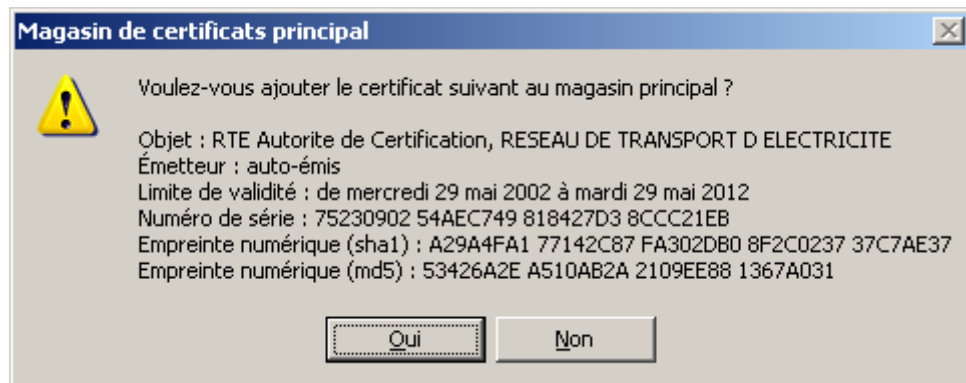
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Leave the selected default option as it is and click on "Next".



Click on "Finish", and the following window then displays the contents of the root certificate to be imported.



4.3.2 Verification of the root certificate fingerprint

To make sure that you have downloaded the genuine RTE AC root certificate, carefully check that the "**SHA1**" or "**MD5**" digital fingerprint displayed in the window shown is **identical** to that shown above.

The **root certificate digital fingerprints** for RTE CA are listed here:

SHA1 A29A 4FA1 7714 2C87 FA30 2DB0 8F2C 0237 37C7 AE37

MD5 53:42:6A:2E:A5:10:AB:2A:21:09:EE:88:13:67:A0:31

If the hash fingerprint is not identical, click on "**No**" and contact our support services.

If it is identical, click on "**Yes**" to finish the import.

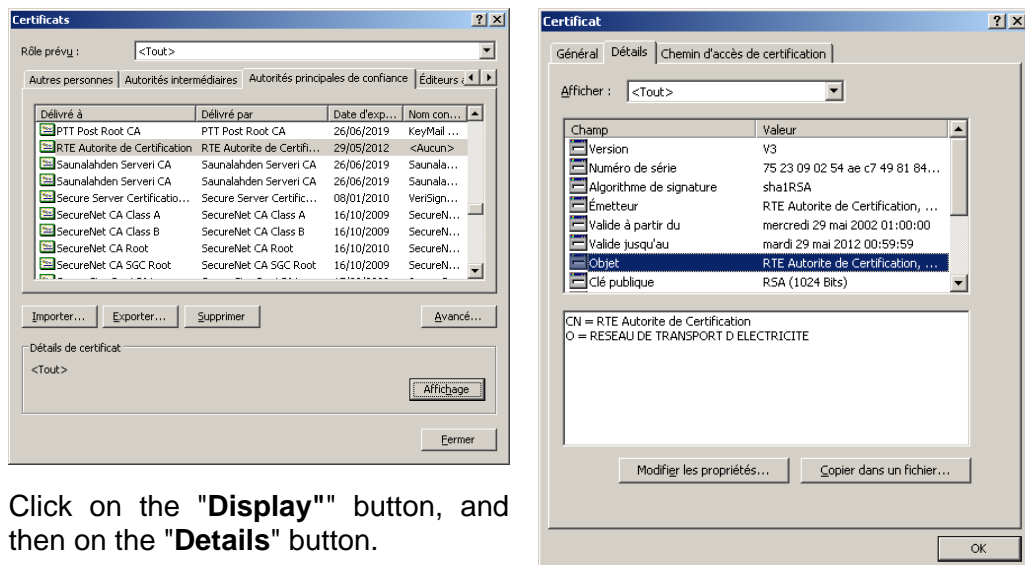


Click on "OK".

4.3.3 Contents of the RTE CA certificate

The root certificate that you have just downloaded is stored in the certificate store appropriate to the browser used. It can be viewed in Internet Explorer, for example:

Use the menu option "**Tools > Internet options...**", "**Contents**" tab, "**Certificates...**" button, "**Trusted root authorities**" tab:

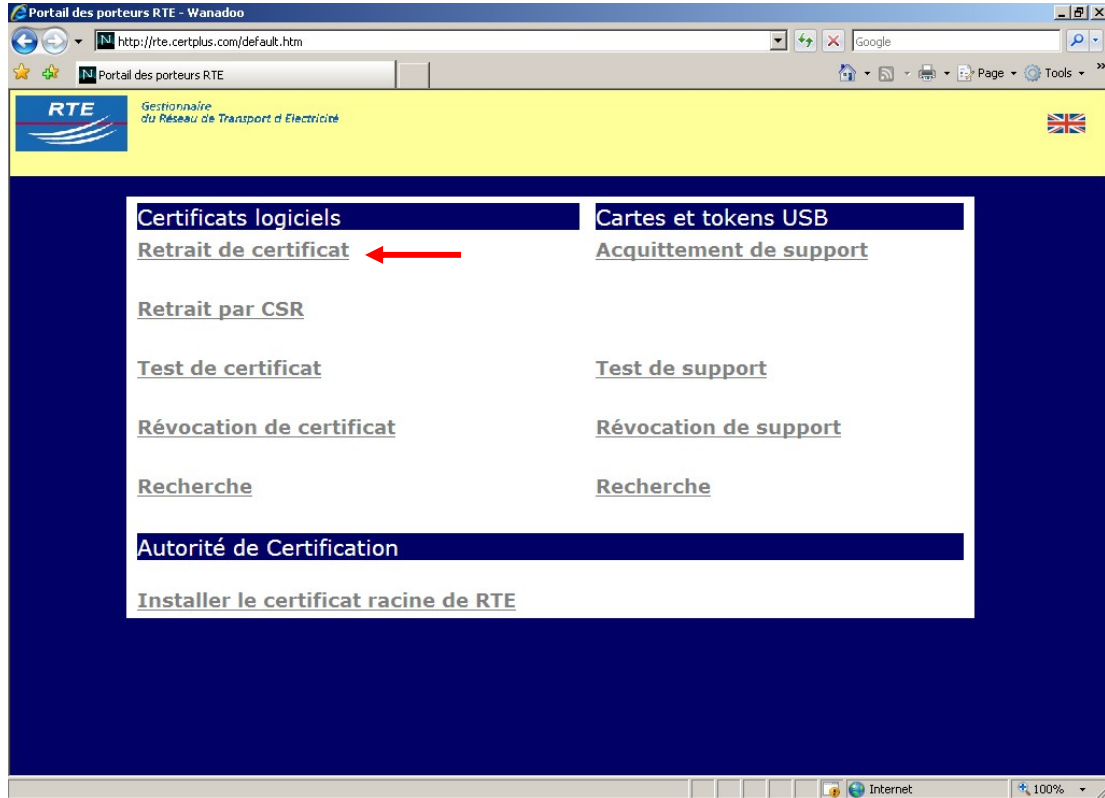


Click on the "**Display**" button, and then on the "**Details**" button.


4.4 Downloading your certificate

To create your key pair and your certificate, you must then connect, on the RTE meeting day specified, to the web site:

<http://rte.certplus.com/default.htm>



Click on the "**Retrait de certificat / Retrieve the certificate**" button.

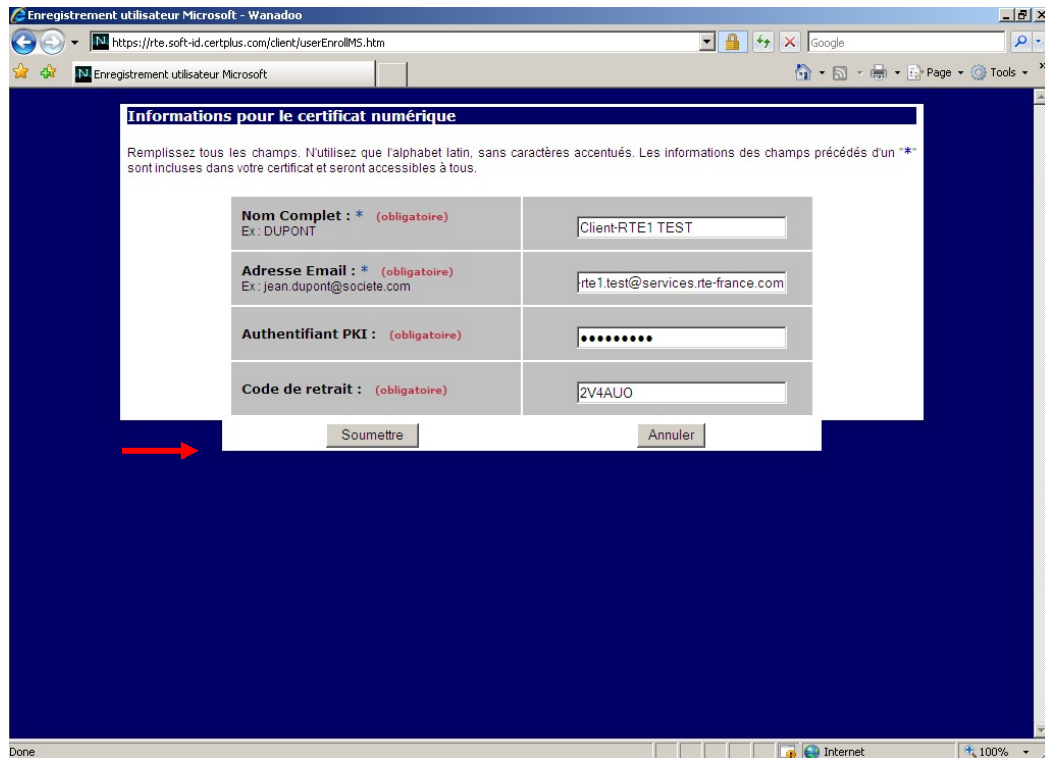
It is possible that a warning message might be displayed at the top of the web page (tagged with the following icon ).

If it does, then click on the message and select "Add-on disabled" > "Run ActiveX control":



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Fill out the following form:



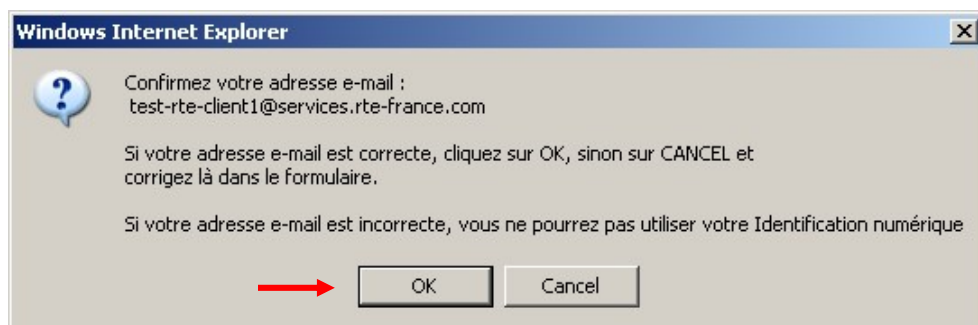
The fields marked with an asterisk must be completed **without diacritic marks** (i.e. accents, cedillas, ...) or **punctuation marks**; as they would also appear in the certificate that will be generated.

The **retrieval code** is the code supplied in the 2nd email that you received from us which allows you to authenticate yourself. To make things easier, you can do simple copy-paste commands to enter the data.

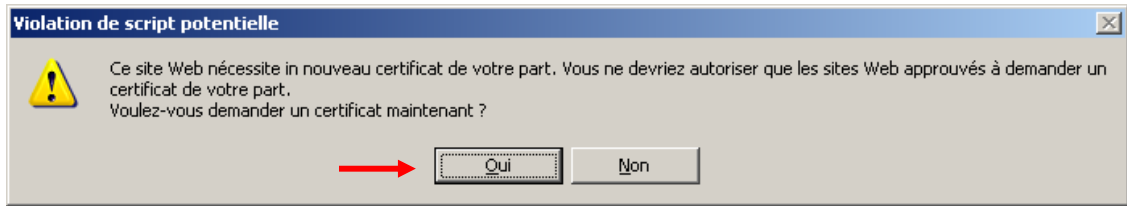
You must likewise enter your **Authentifiant Utilisateur PKI (PKI User Credentials)**, just as they were supplied in the RTE IT system access technical specifications; they will serve to authenticate you with the RTE Hotline any time that you contact them.

Lastly, click on "**Submit**" to send your request for the digital certificate.

A dialogue box will ask you to confirm your email address:



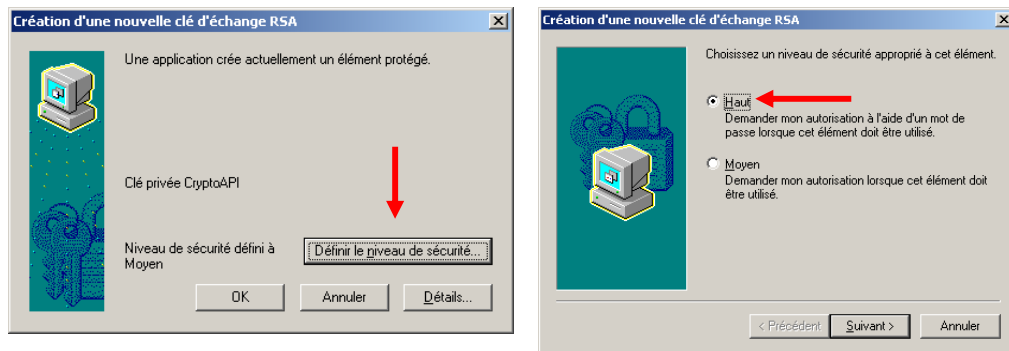
Click on the "**OK**" button, or "Cancel" to return to the form data entry screen.



Click on the "Yes" button.

4.4.1 Generation of the key pair

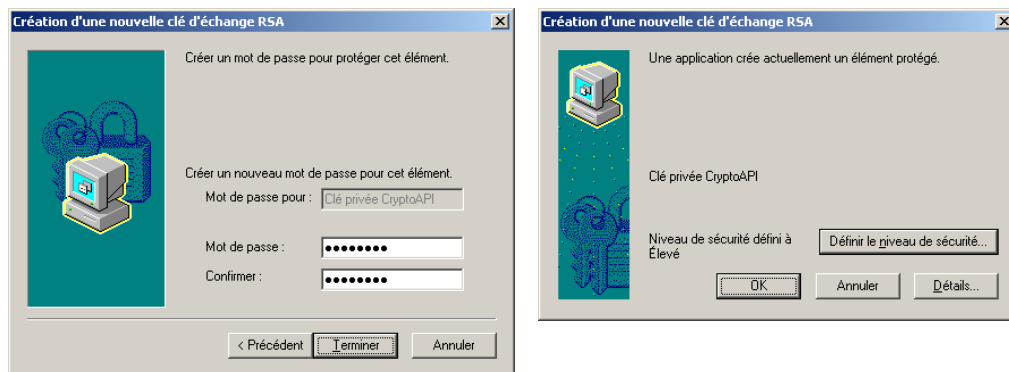
The dialogue box shown below will then be displayed, indicating that an RSA key pair has been created by Internet Explorer on your workstation:



Click on the "Define the security level" button. Select the "High" option, then click on "Next".

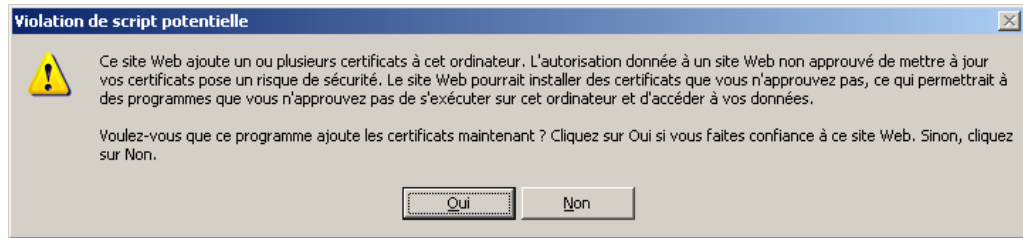
The key pair that will be generated is, by default, at a "medium security" level, which means that each later use of this key pair will cause the display of a simple acknowledgement message: the certificate holder is also warned of this usage but no password is requested.

For protected use of your key pair, which we recommend, you should rather choose "high security", which will mean that a password, that you will choose here, will be asked of you for every later use of your key pair. The screens below describe the procedure to set this security level.



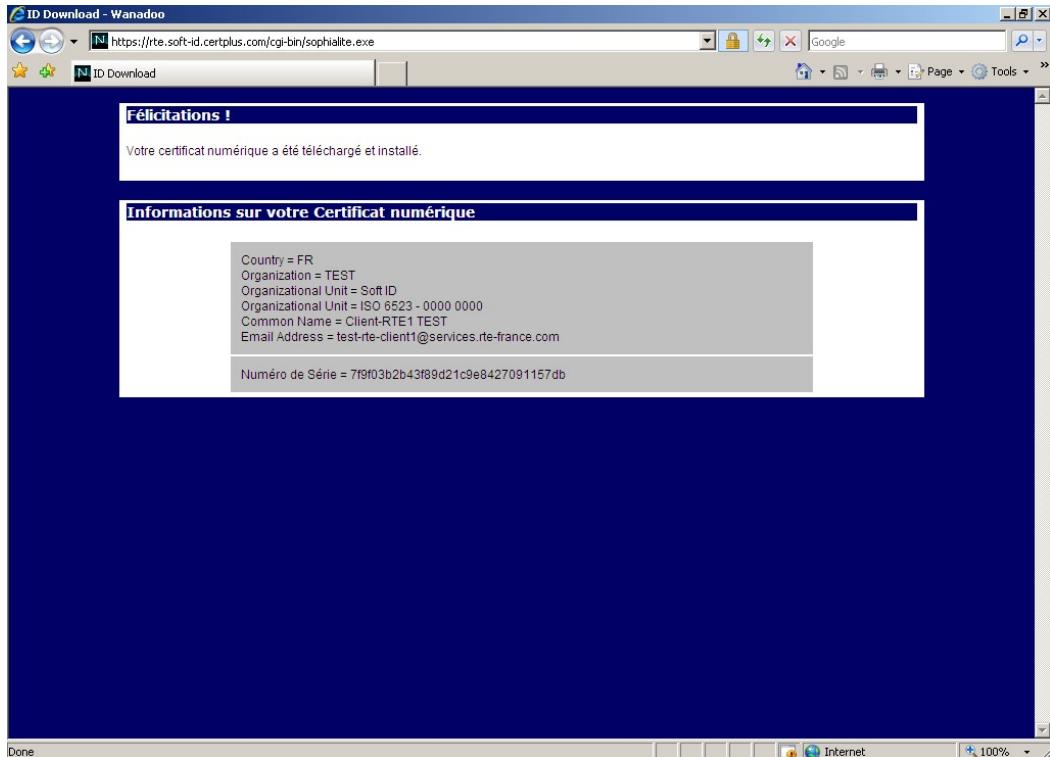
Enter a password, then click on the "Finish" button. Click on the "OK" button.

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Click on the "Yes" button.

4.4.2 Installation of the certificate



Next, the certificate is automatically downloaded and installed in the Internet Explorer certificate store. The page opposite is displayed to indicate the end of this process.

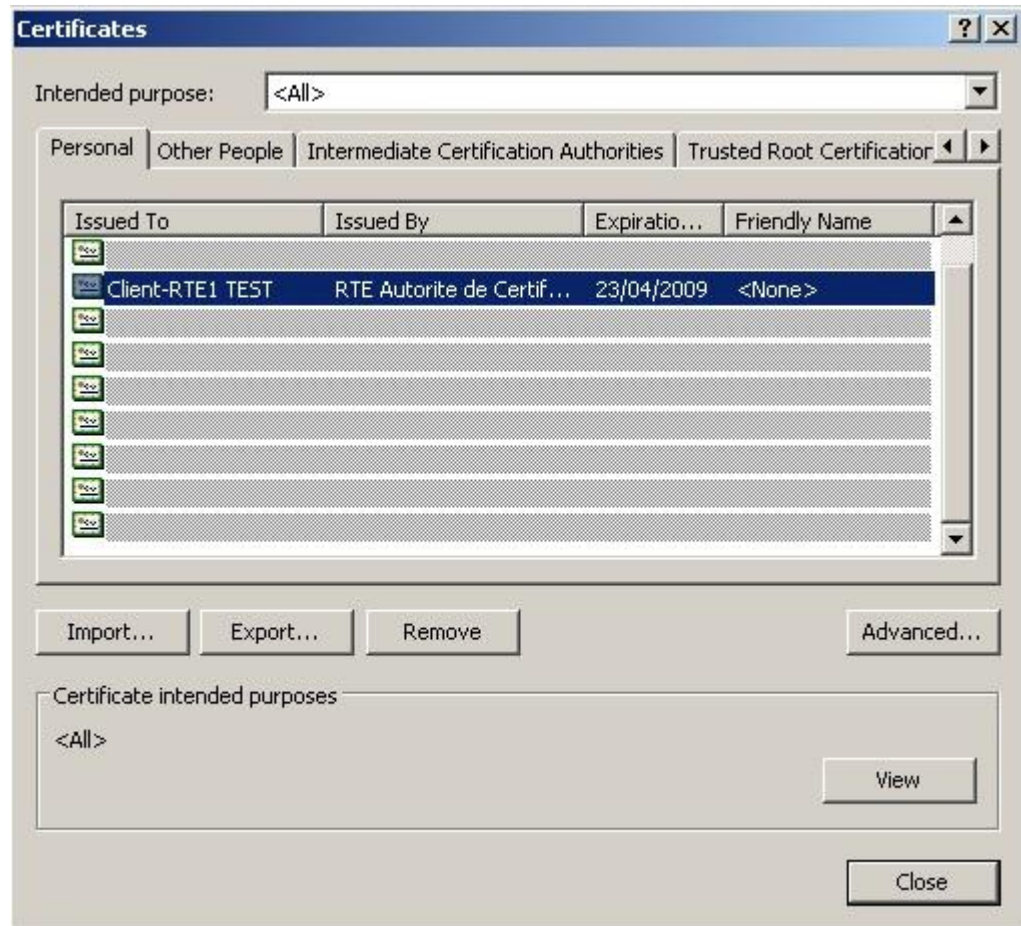
IMPORTANT

Once downloaded, your certificate with its key pair and root certificate must be saved on a removable medium (e.g. a diskette) that you must store securely to prevent unauthorised access. Refer to the appendix for the certificate export procedure.

4.4.3 Contents and verification of your digital certificate

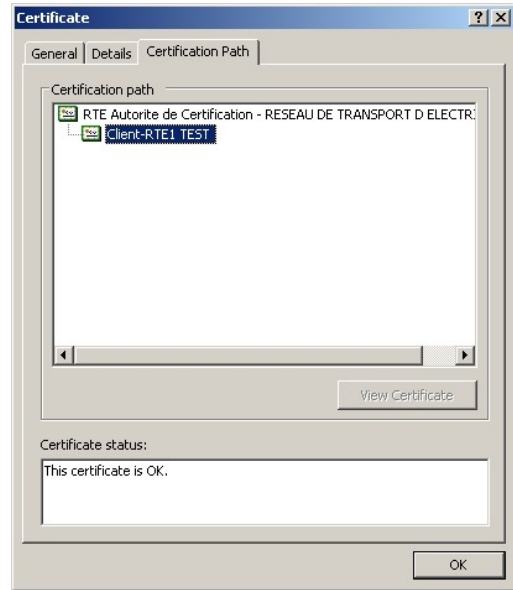
Regardless of the browser used, the contents of the downloaded certificate will obviously be the same, only the presentation of the information on the screen will vary. For downloads with Internet Explorer, open the certificate store with the following menu choices:

"Tools > Internet options...", "Contents" tab, "Certificates..." button:



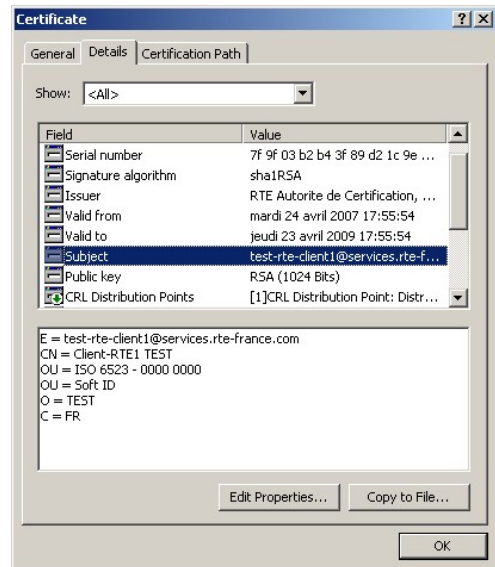
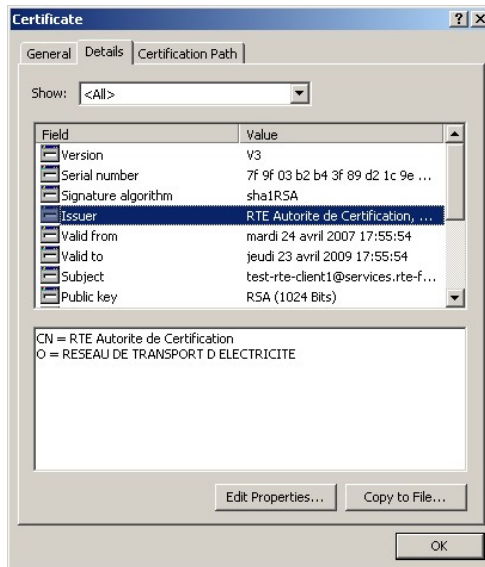
Select your certificate, then click on "Display".

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It is valid for 2 years from the download date. This tab allows you to verify your certificate.

The "valid" status of your certificate, as well as the complete display of the certificate access path (2 levels), shows that your certificate has been correctly installed along with the root certificate, and therefore all the correct usage conditions for your certificate have been satisfied.



4.5 Usage in your browser

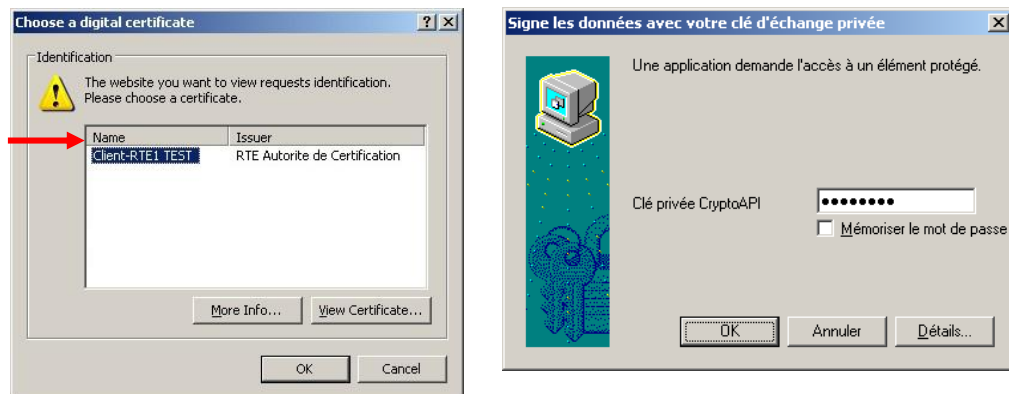
4.5.1 Authentication and encryption

Steps to follow:

- Start Internet Explorer;
- Enter the URL for the RTE application or for the "RTE Customer Services Portal" (this URL starts with "https://");
- During authentication, the browser will ask you to choose the certificate before attempting to authenticate you, and then prompt for the certificate store security password;
- If several certificates are offered to you, you should choose the one that was supplied to you for the application which you are currently attempting to access (use the "Display the certificate" button to look at their contents);
- Now all the data that you send and receive will be encrypted.

4.5.2 Example of accessing the "RTE Customer Services Portal"

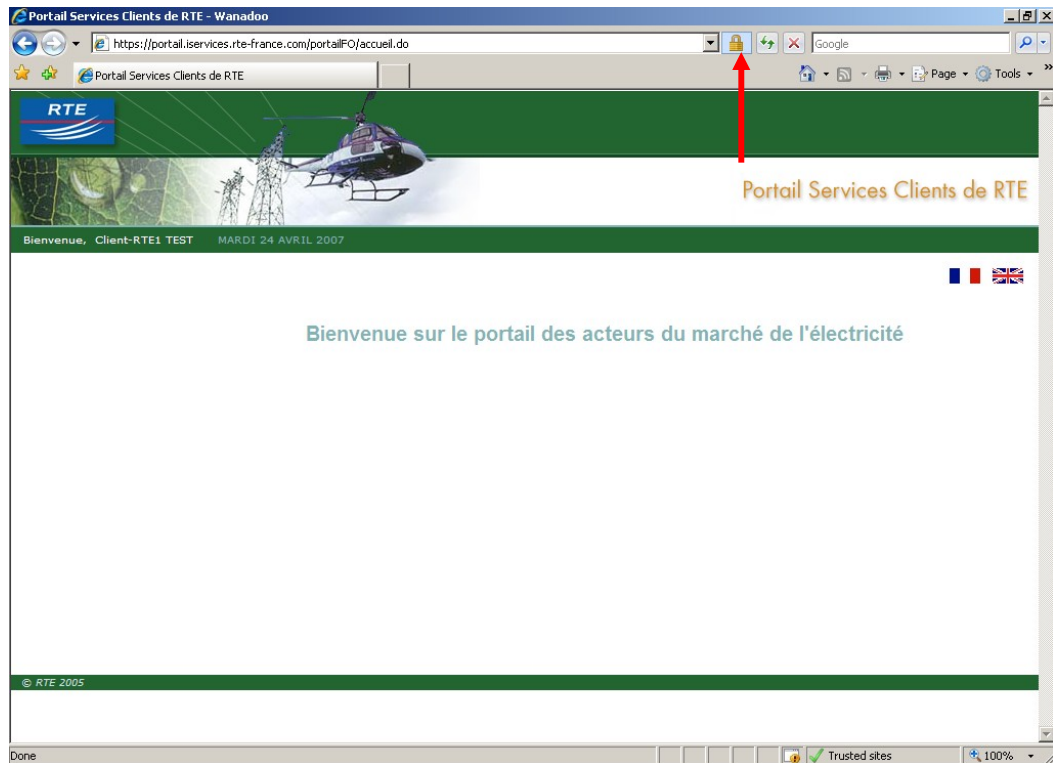
Whenever you access the welcome page with "https" as the prefix, you will have to select your certificate:



The "Display the certificate..." button allows you to look at the contents of the selected certificate, then click on "OK". If necessary, this window will ask you for the store password for your certificate.

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The welcome page will then be displayed in a secure setting:



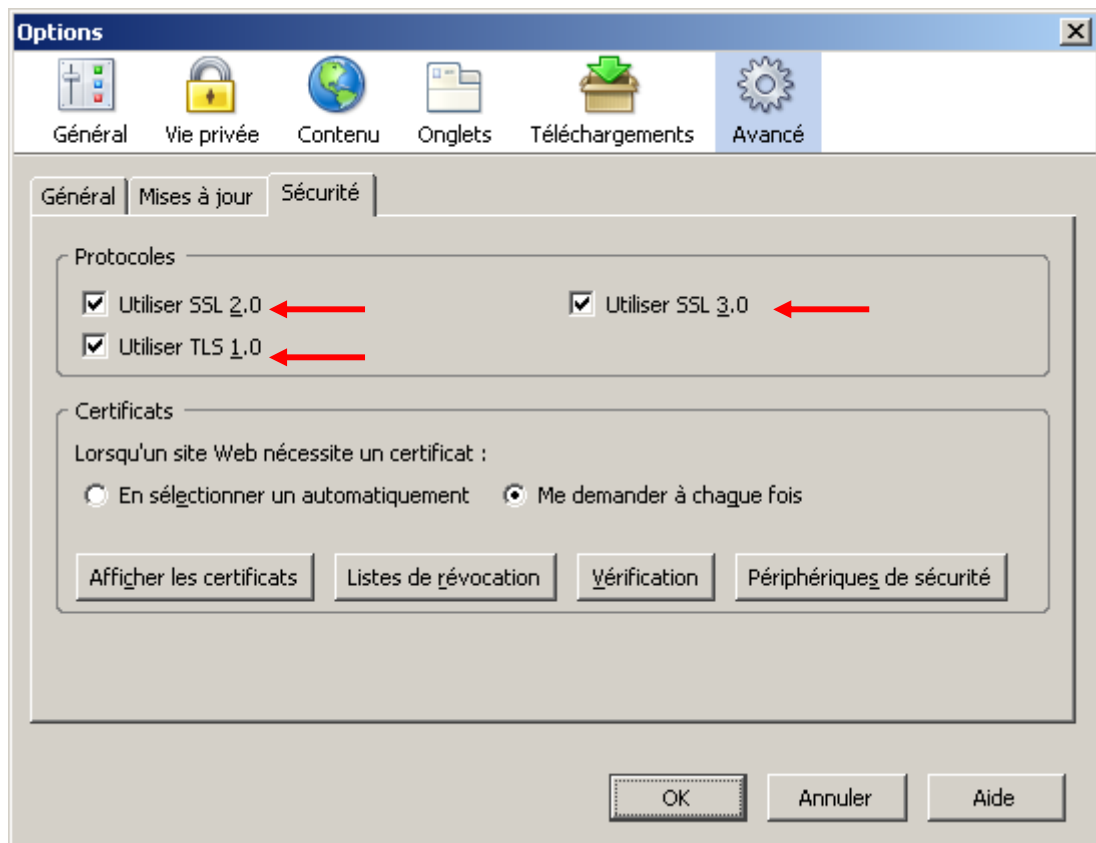
5. Mozilla Firefox



5.1 Configuration for SSL/TLS protocols

From the "**Tools > Options...**" menu, select the "Advanced" section, and then the "Security" tab.

In this window, select the 3 checkboxes "Use SLL [...]" and "Use TLS 1.0":



5.2 Request for a digital certificate

5.2.1 Preliminary measures

The following steps must have been completed in advance:

- **The company representative has made an access request:**

The company representative must have filled out and signed the "RTE IT System and Applications Access Request Forms"; and must have sent them to the RTE customer relations officer:

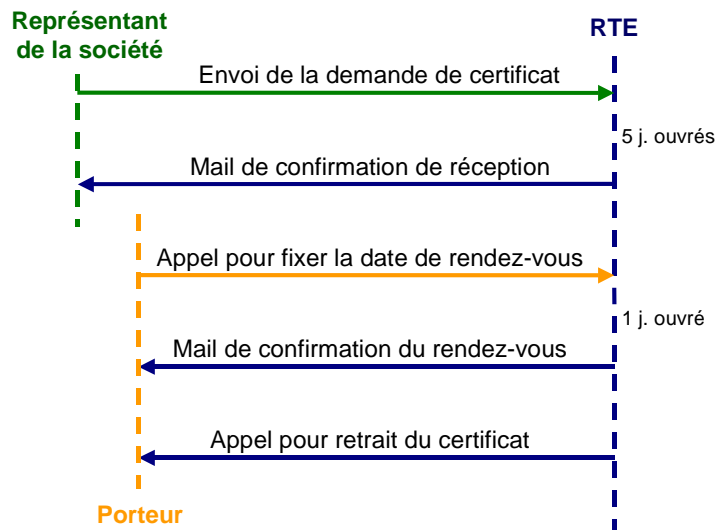
- **We have registered your request:**

Upon reception of those forms, we will have created your application access account(s).

5.2.2 Overall schematic

Once the certificate request has been registered and validated by our services (within 5 working days), a message will be sent to the company representative to acknowledge receipt of the forms and asking him to call us to fix a phone meeting with the certificate holder for the day of the certificate installation.

Then, a message will be sent to the certificate holder after this call, reminding him of the scheduled meeting and giving him the address of the download web site and the retrieval code which will allow him to download his certificate from his own workstation.



The certificate holder must then connect to the digital certificate administration web site from his workstation to fill out and validate the registration form online. At that moment, a key pair will be generated on his workstation and his certificate will be downloaded.

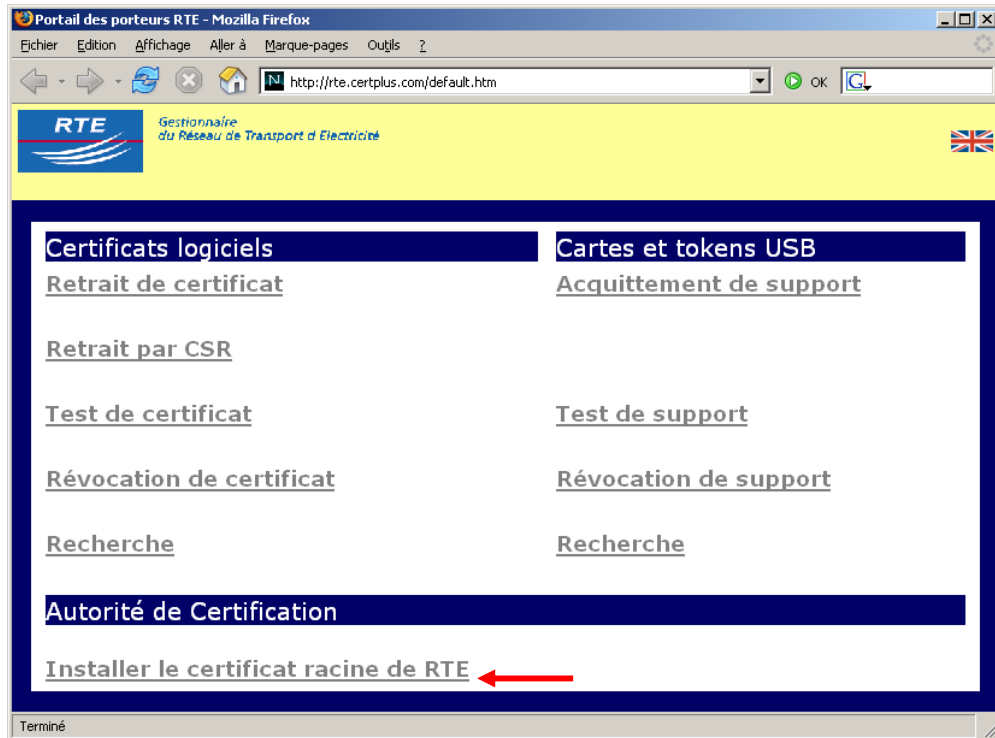
5.3 Installation of the RTE CA root certificate

5.3.1 Download and installation

The RTE root certificate must now be installed in your browser so that RTE is known as the trusted Certification Authority.

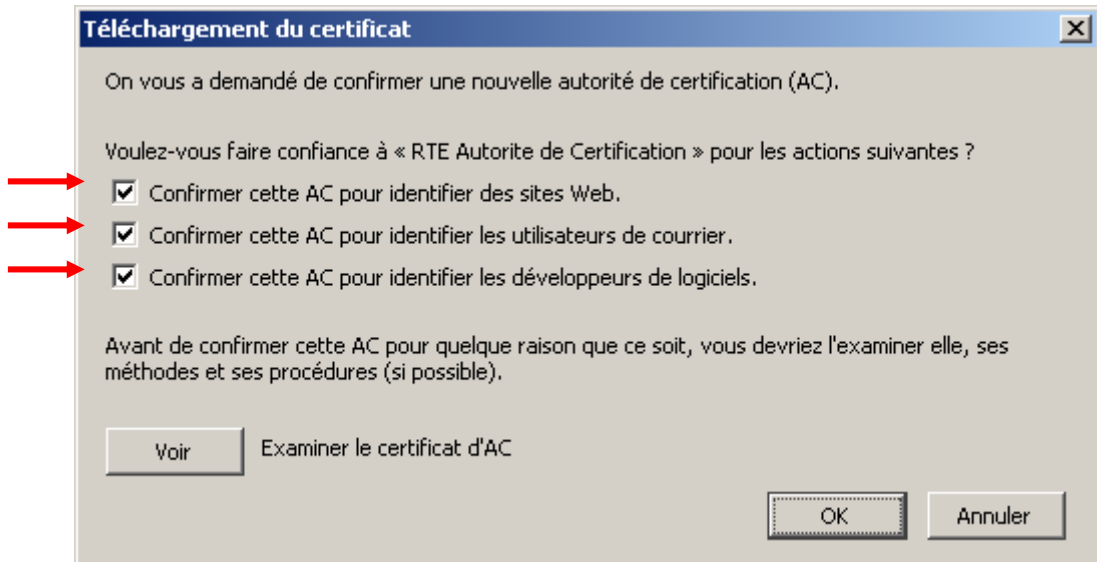
To do this, please navigate to the RTE customer site at the following address:

<http://rte.certplus.com/default.htm>



Click on the link "**Installer le certificat racine de RTE / Install the RTE root certificate**"

A dialogue box will be displayed, in which you must select the 3 checkboxes "Confirm this CA for identification [...]" to confirm confidence in the RTE CA:



5.3.2 Verification of the root certificate fingerprint

Click on "**View**" to verify that the certificate to which you are about to grant trusted status is indeed the RTE root certificate:

To make sure that you have downloaded the genuine RTE AC root certificate, carefully check that the "SHA1" or "MD5" digital fingerprint displayed in the dialogue box shown is **identical** to that shown opposite.



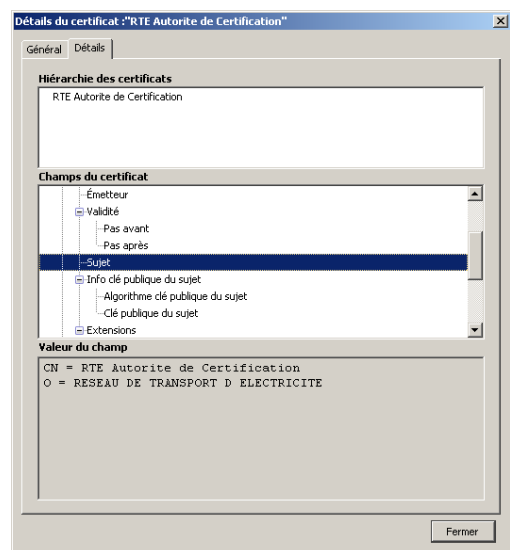
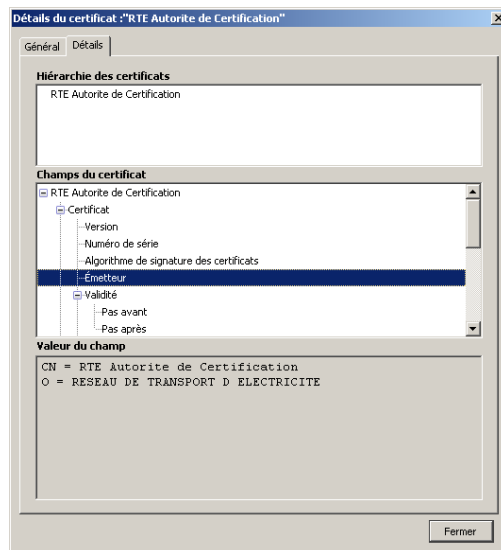
The root certificate digital fingerprints for RTE CA are listed here:

SHA1 A29A 4FA1 7714 2C87 FA30 2DB0 8F2C 0237 37C7 AE37

MD5 53:42:6A:2E:A5:10:AB:2A:21:09:EE:88:13:67:A0:31

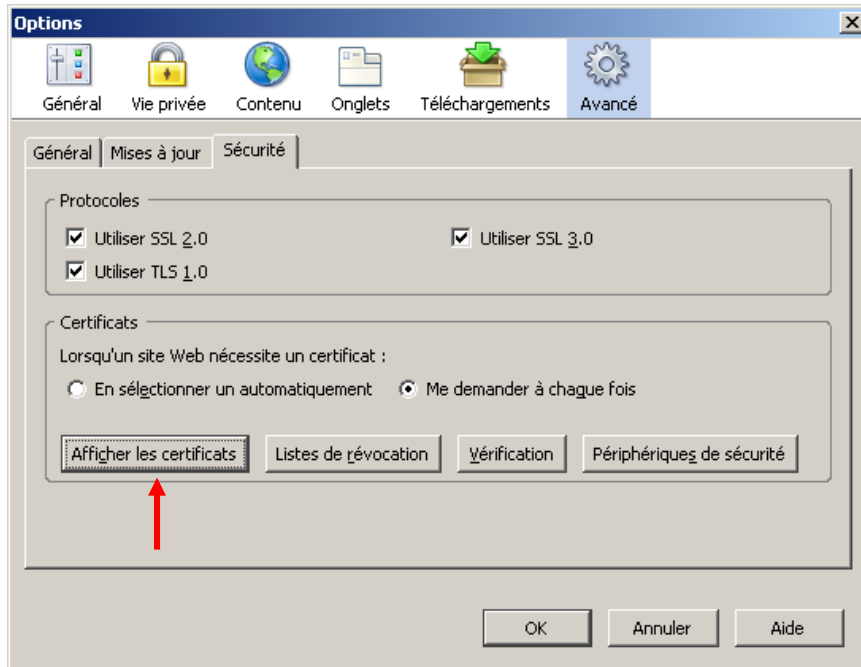
If it is not identical, click on "Close" to return to the previous window where you should click on "Cancel" and contact our support services.

If it is identical, continue the process to finish the import. The "Details" tab:

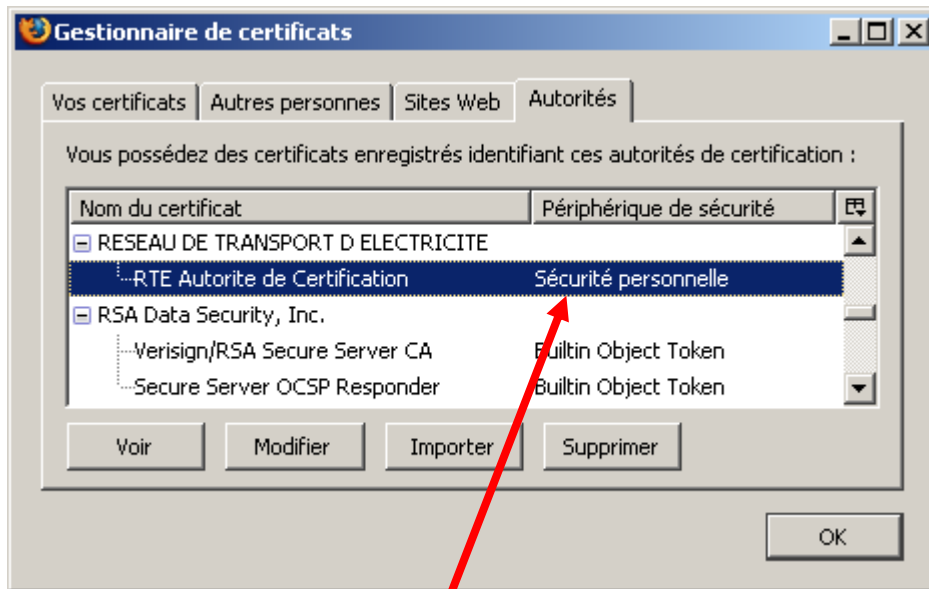


Click on "Close" to return to the initial screen (see above) where you can click on "OK": the RTE CA root certificate is now installed in Mozilla Firefox.

To view this certificate later in Mozilla Firefox, you must use the **"Tools > Options..."** menu, and select the **"Advanced"** section, and the **"Security"** tab.



In the previous window, you must click on the **"Display the certificates"** button.



In the "Authorities" tab, you can verify that the "RTE Autorite de Certification" root certificate has indeed been registered on your PC hard drive ("Personal security"), and view it by selecting it and clicking on "View".

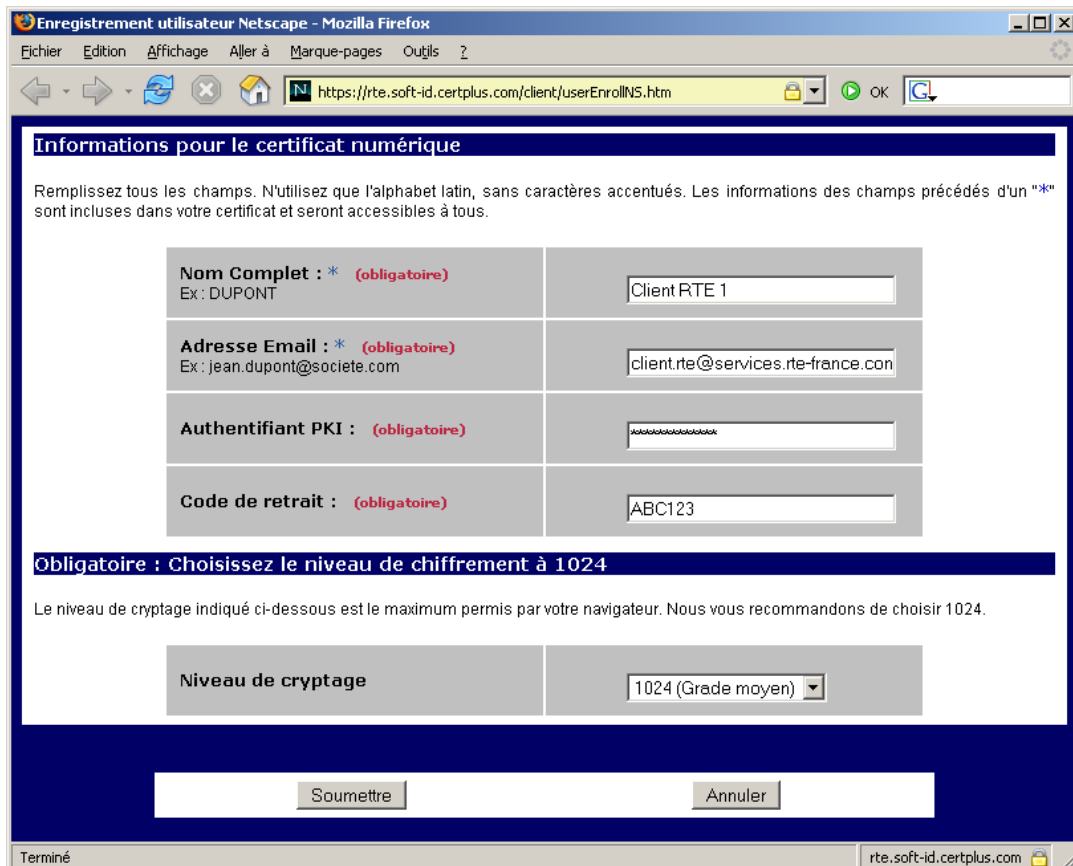
5.4 Downloading your certificate

To create your key pair and certificate, you must connect to the following site:

<http://rte.certplus.com/default.htm>



Click on the "**Retrait de certificat / Retrieve the certificate**" button to install your digital certificate.



The fields marked with an asterisk must be completed **without diacritic marks** (i.e. accents, cedillas, ...) **or punctuation marks**; as they would also appear in the certificate that will be generated.

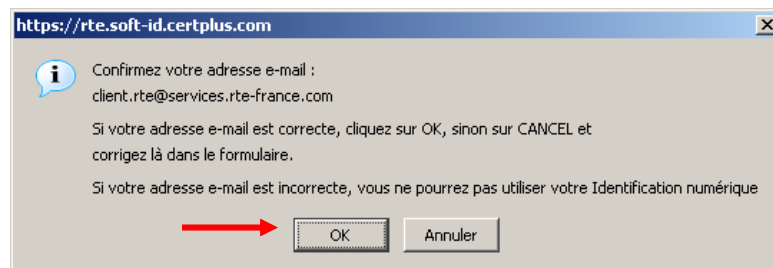
The **retrieval code** is the code supplied in the 2nd email that you received from us which allows you to authenticate yourself. To make things easier, you can do simple copy-paste commands to enter the data.

You must likewise enter your **Authentifiant Utilisateur PKI (PKI User Credentials)**, just as they were supplied in the RTE IT system access technical specifications; they will serve to authenticate you with the RTE Hotline any time that you contact them.

On this form, a dropdown list directly asks you to select the key size. You must **absolutely** select a size of **1024 bits**.

Lastly, click on "**Submit**" to send your request for the digital certificate.

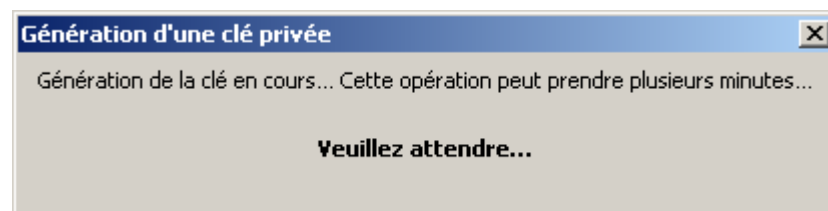
A dialogue box will ask you to confirm your email address:



Click on "OK".

5.4.1 Generation of the key pair

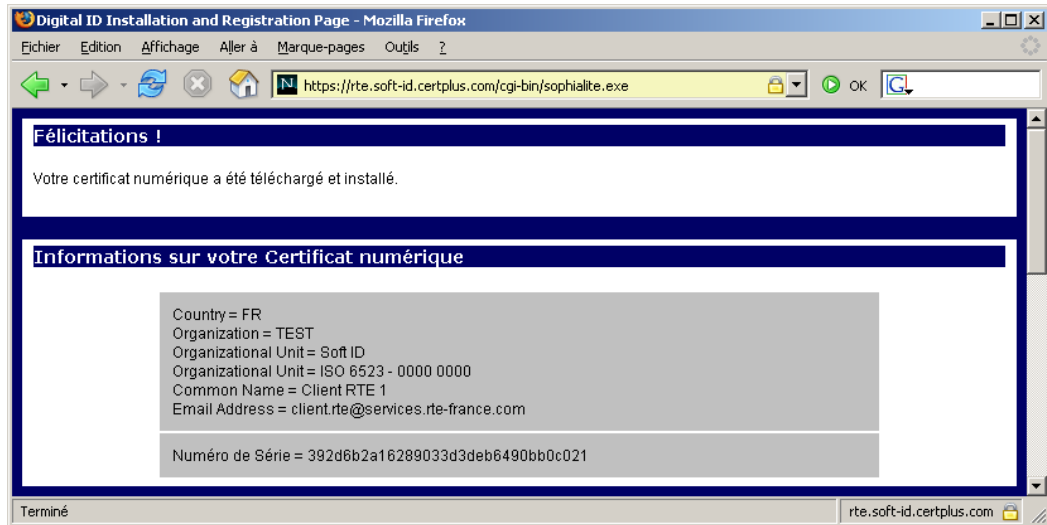
Finally, the RSA key pair is generated by Mozilla Firefox, and the following message is displayed:



5.4.2 Installation of the certificate

Your certificate is finally downloaded and installed in the Mozilla Firefox certificate store. The following page will then be displayed to indicate the end of the process:

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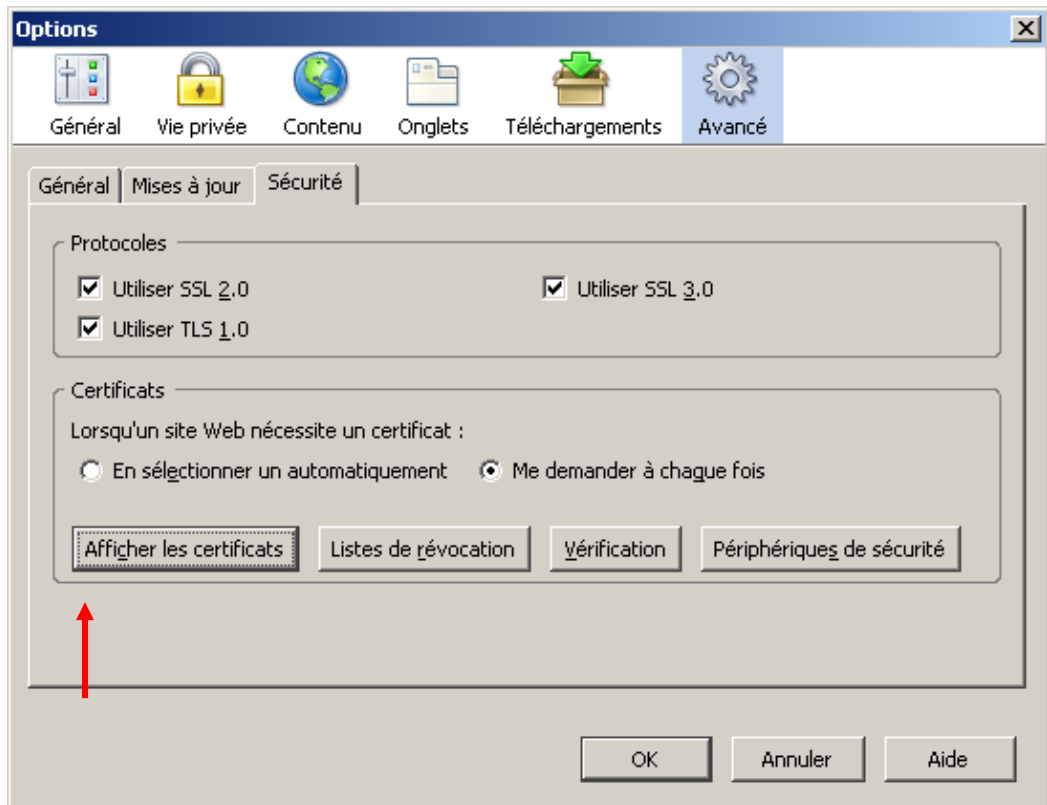
IMPORTANT

Once downloaded, your certificate with its key pair and root certificate must be saved on a removable medium (e.g. a diskette) that you must store securely to prevent unauthorised access. Refer to the appendix for the certificate export procedure.

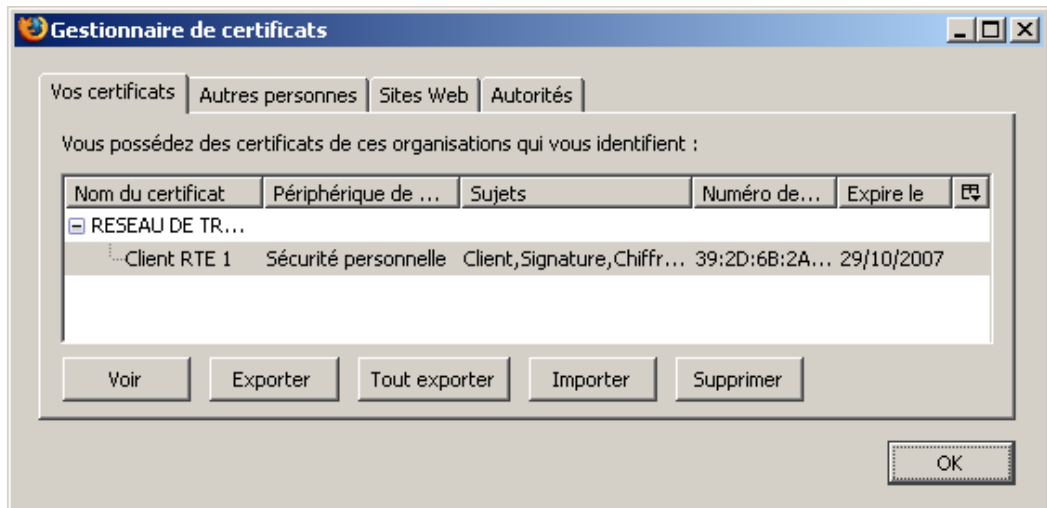
5.4.3 Viewing and verification of your digital certificate

Regardless of the browser used, the contents of the downloaded certificate will obviously be the same, only the presentation of the information on the screen will vary.

For Mozilla Firefox, you must click on the "**Advanced**" section, and then on the "**Security**" tab:

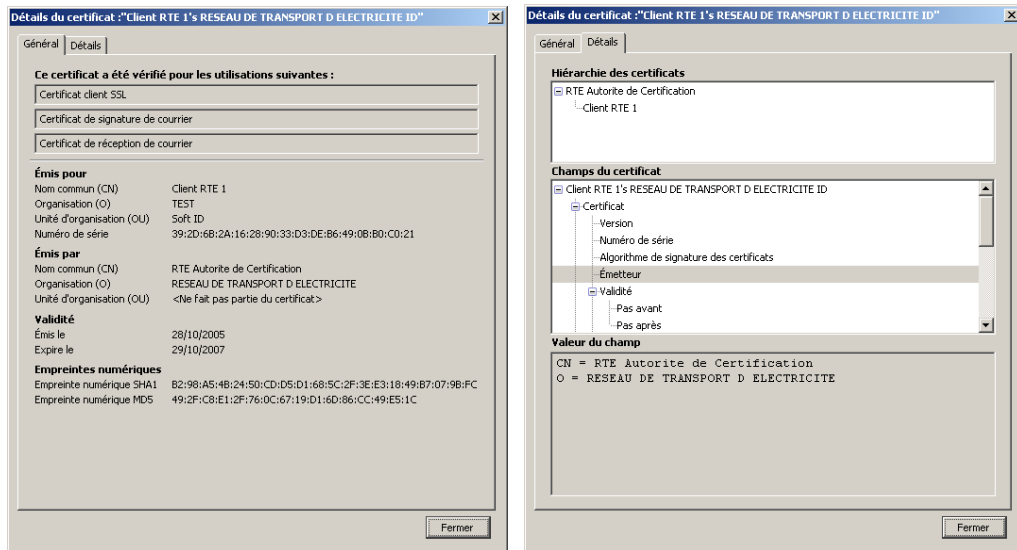


Click on the "Display the certificates" button.



The "Your certificates" tab.

The certificate is a digital certificate: once installed, it will be described as "Personal security". You can view it by selecting it and clicking on "View".



The 1st tab displays the message "This certificate has been verified for the following uses". The 2nd tab displays the certification hierarchy with the RTE CA root certificate. This ensures that all the certificates have been correctly installed, and that all the correct usage conditions for your certificate have been satisfied.

5.5 Usage in your browser

5.5.1 Authentication and encryption

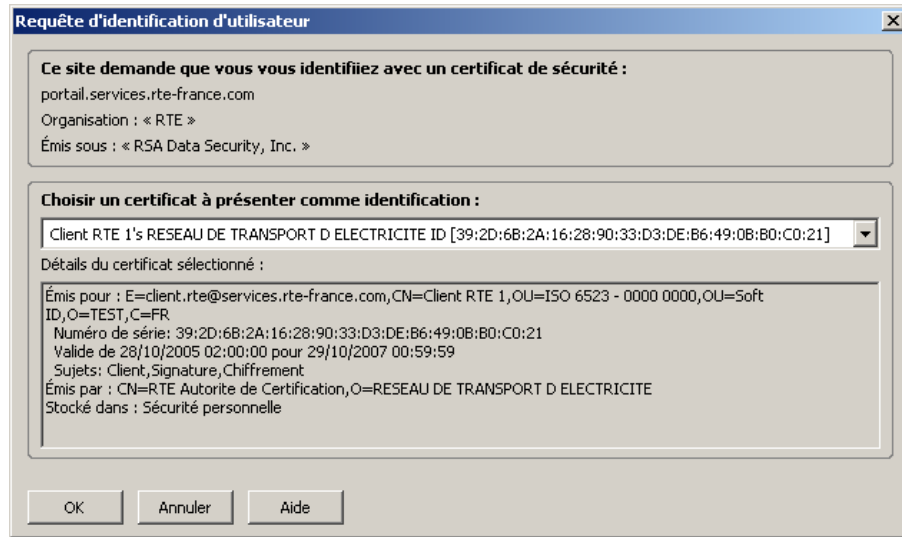
Steps to follow:

- Start Mozilla Firefox;
- Enter the URL for the RTE application or for the "RTE Customer Services Portal" (this URL starts with "**https://**");
- During authentication, the browser will ask you to choose the certificate before attempting to authenticate you, and then prompt for the certificate store security password;
- If several certificates are offered to you, you should choose the one that was supplied to you for the application which you are currently attempting to access (the contents of the selected certificate from the dropdown list are displayed beneath the list);
- Now all the data that you send and receive will be encrypted.

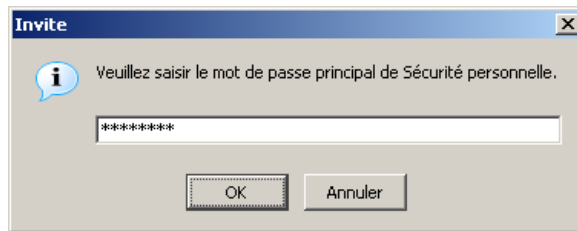
5.5.2 Example of accessing the "RTE Customer Services Portal"

Whenever you access the welcome page with "https" as the prefix, you will be requested to select your certificate:

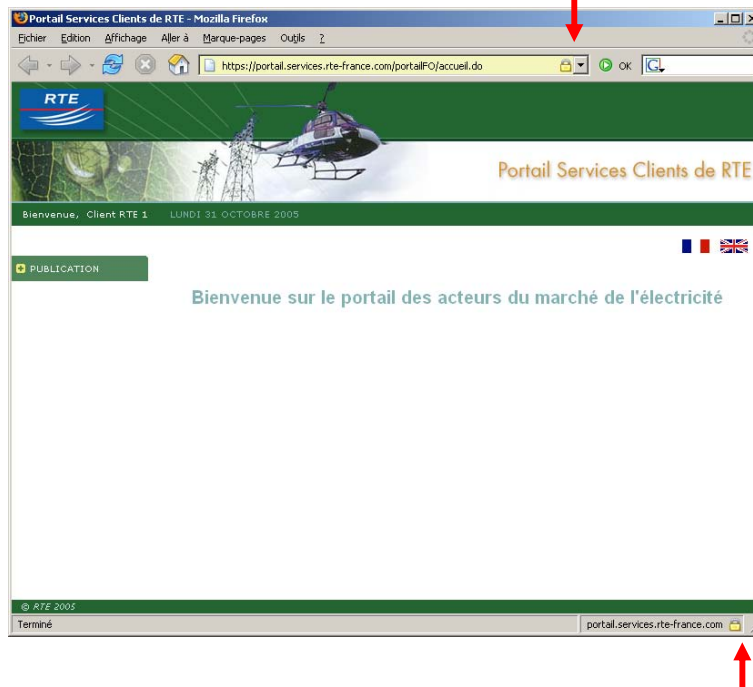
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Select your certificate from the dropdown list labelled "Choose a certificate to present as identification" and click on "OK". If necessary, this window will ask you for the password to the Mozilla Firefox certificate store.



The welcome page will then be displayed in a secure setting:



6. Certificates and email software

Depending on the email client that you use (Outlook 2000/XP/2003, Outlook Express, Mozilla Thunderbird), we suggest that you refer to the appropriate one of the following sections.

Steps to follow:

- **install the "RTE Autorité de Certification" root certificate**, so that the email software trusts your certificates and the applications' certificates (refer to the installation of the RTE root certificate in the associated web browser);
- **configure your email account assigned for communications with RTE**, so that the email software always encrypts and signs your messages (being sent from the RTE IT system);
- **install the application certificate(s)**, so that messages that you send to those applications are encrypted.

Here are the associated web browsers that you should configure (if they have not already been done), in order that your email client is correctly configured and operational:

Email client	Associated web browser
Outlook 2000/XP/2003	Internet Explorer
Outlook Express	Internet Explorer
Mozilla Thunderbird	Mozilla Firefox (similar configuration)
Lotus Notes	Configuration is specific to Lotus Notes

6.1 Outlook 2000/XP/2003

6.1.1 Configuration

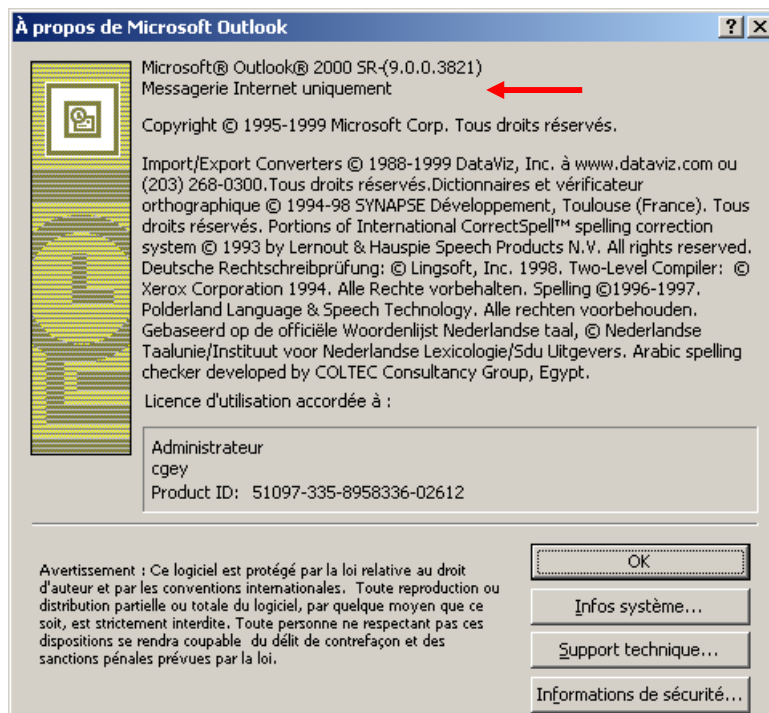


IMPORTANT
<p>Before starting Outlook 2000 (French version), run the following command:</p> <p><PACKAGE>\Windows Updates\Outlook 2000\rench-fr-configuration.reg</p> <p>Doing this will make Outlook 2000 conformant with the most recent cryptographic standards in use in France.</p>

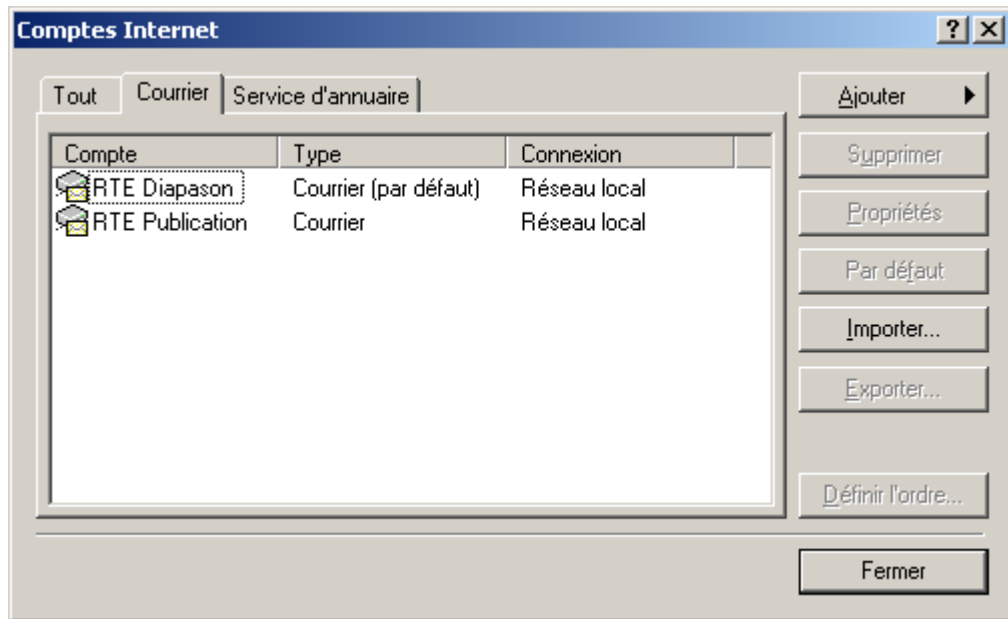
To be able to associate your certificate with your email account under Outlook, your certificate must be installed under Internet Explorer. This is automatically the case if you have downloaded it in Internet Explorer; but if you downloaded it with Mozilla Firefox, you must export it from that browser and import it into Internet Explorer, with the corresponding private key and the RTE CA root certificate. Refer to the section at the end of this document.

Start up Outlook and click on the "?", and then on "About Microsoft Outlook 2000".

If the Outlook installation is of the "Internet Email only" type, as shown below:

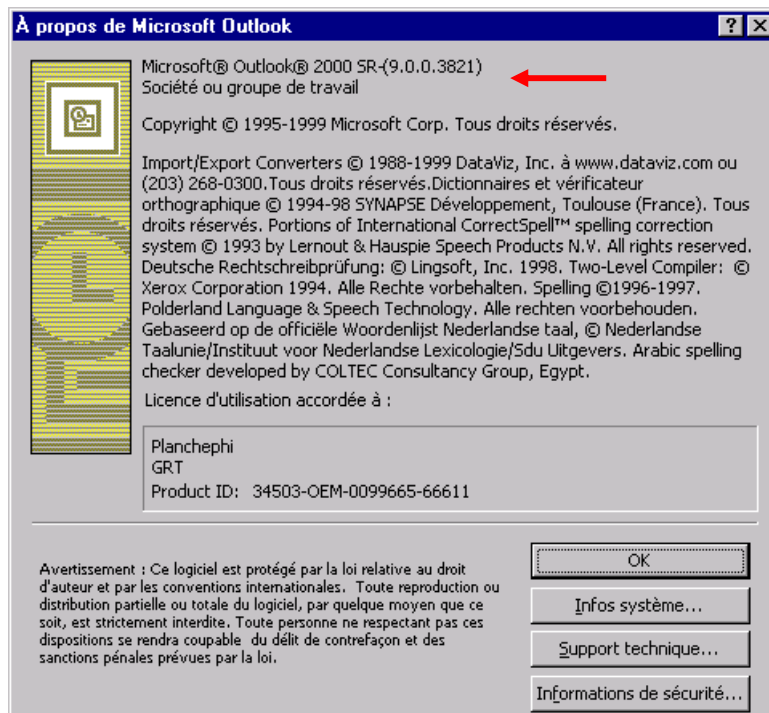


Then open the "Tools -> Accounts" menu option:



In the "Email" tab, select your RTE communications account, then click on the "By default" button, and finally click on the "Close" button,

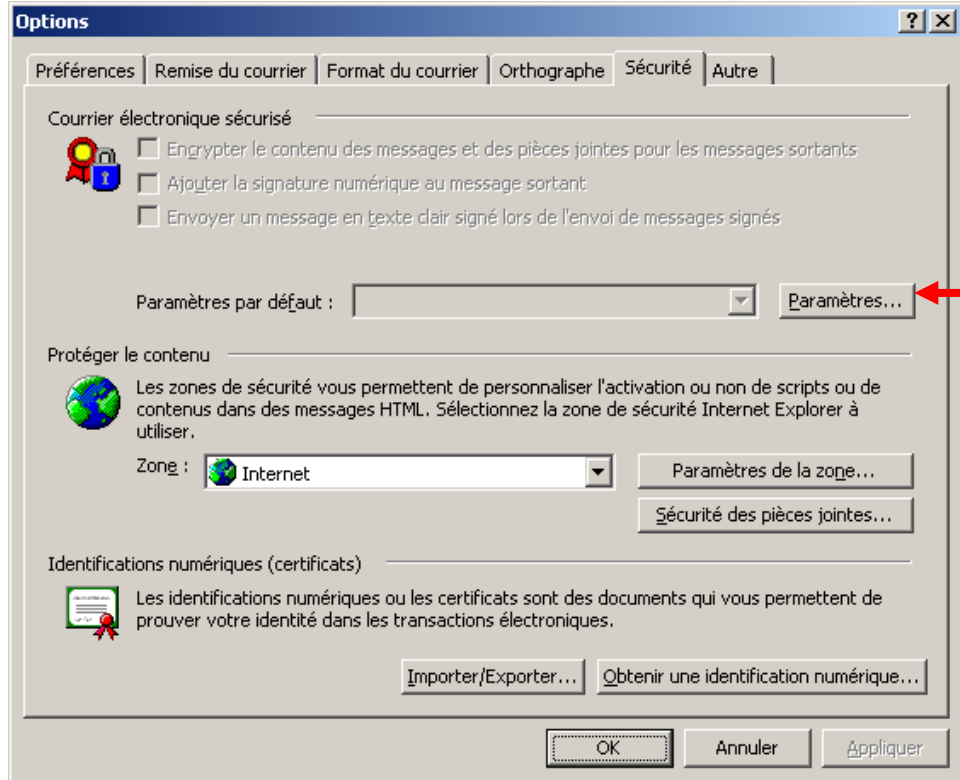
On the other hand, if the Outlook installation is of the "Company or workgroup" type as below:



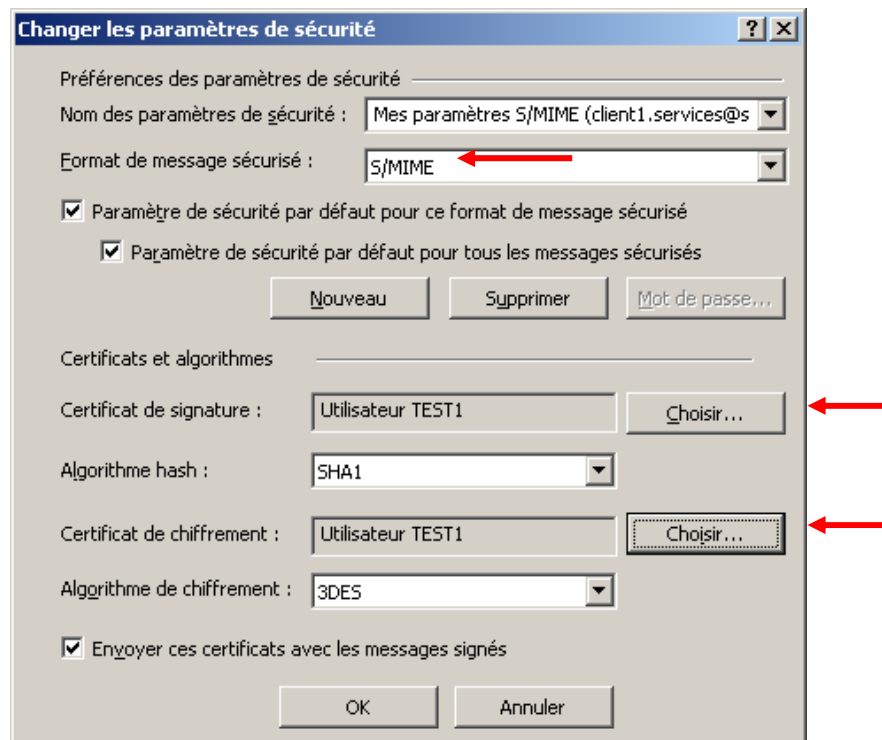
You do not need to do anything more in particular at the account level.

Concerning all types of Outlook installations.

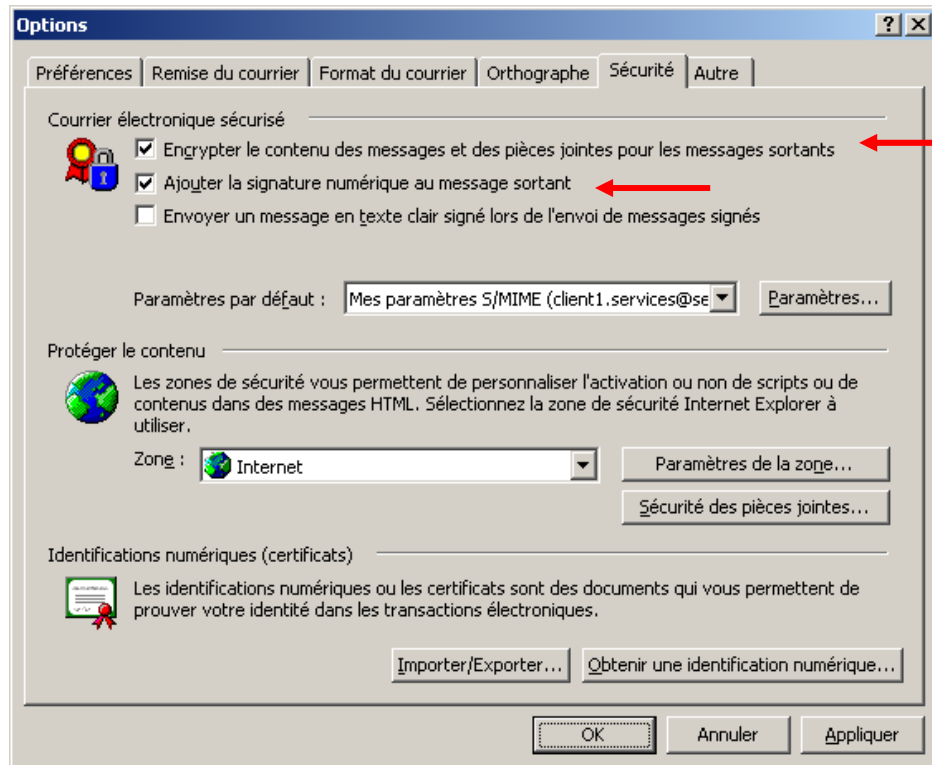
Still from within Outlook, start the "Tools > Options..." menu:



Select the "Security" tab, then click on the "Parameters..." button:



Click on the two "Select..." buttons in order to select your certificate for signing and encryption from the list of selectable certificates that is presented to you (you can also display any certificate in the list to view its contents and assure yourself that you have chosen the right one). Finally, verify that the data is the same as that above (S/MIME, boxes checked, certificates, algorithms); if the "Name of the security parameters" field is empty, enter a name like "RTE Certification". At last, click on "OK". The following window will then be displayed:



Check the "Encrypt the contents of messages and attached documents for outgoing messages" and "Add the digital signature to outgoing messages" boxes and click on "OK".

All your emails destined for RTE applications sent from the default account will now be encrypted and signed.

6.1.2 User Guide

6.1.2.1 When to use the certificate

By using your certificate, you can:

- authenticate yourself to RTE applications;
- sign and encrypt emails destined for RTE applications;
- decrypt electronic messages that have been sent to you by RTE applications.

The encryption and signature of a message are two distinct processes: you sign a message with your own certificate whereas you encrypt it with the recipient's certificate. The recipient's certificate can be obtained in several

ways. The RTE applications send you their certificates by sending you a signed message: this is the way that you recover their certificates.

To do this, when you receive a signed message, use the "Add to contacts" function to save its certificate as you read it, and you can then use it later to send the application encrypted messages.

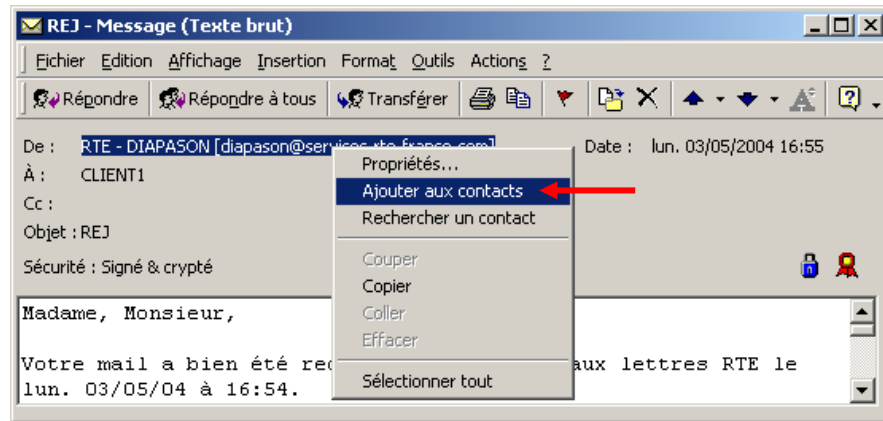
The decryption of a message is done in an automatic manner when you already have the email sender's certificate and if you open that message with a message client that supports S/MIME format secured messages, which Outlook does.

IMPORTANT NOTE

The encryption of a message is dependent on the possession of a valid certificate corresponding to the recipient's email address.

6.1.2.2 Application certificates

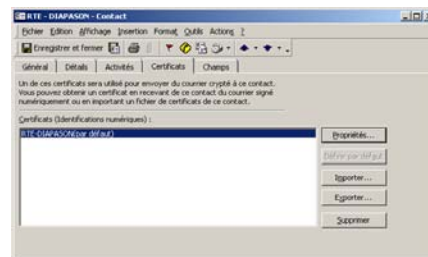
Upon receiving the first signed and encrypted message from an application, you should install the sending application's certificate. To do so, you must add the application's email address to your address book by clicking on "Add to contacts" with the right mouse button when positioned over the sender's name of the message received:



The "General" tab:



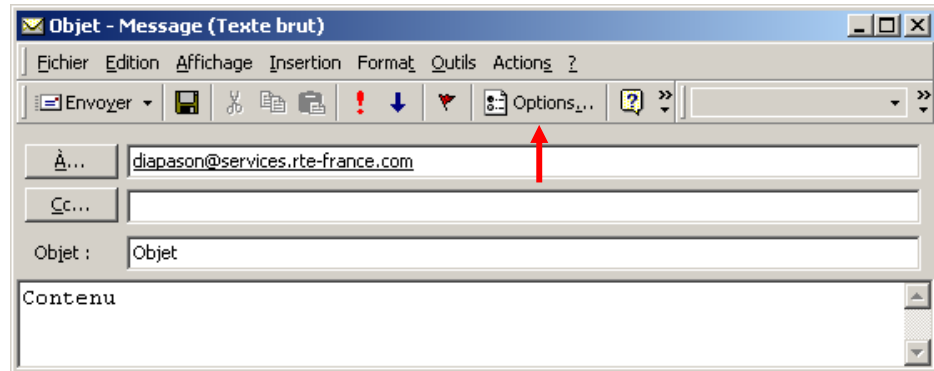
The "Certificates" tab:



"Ctrl+S" to save.

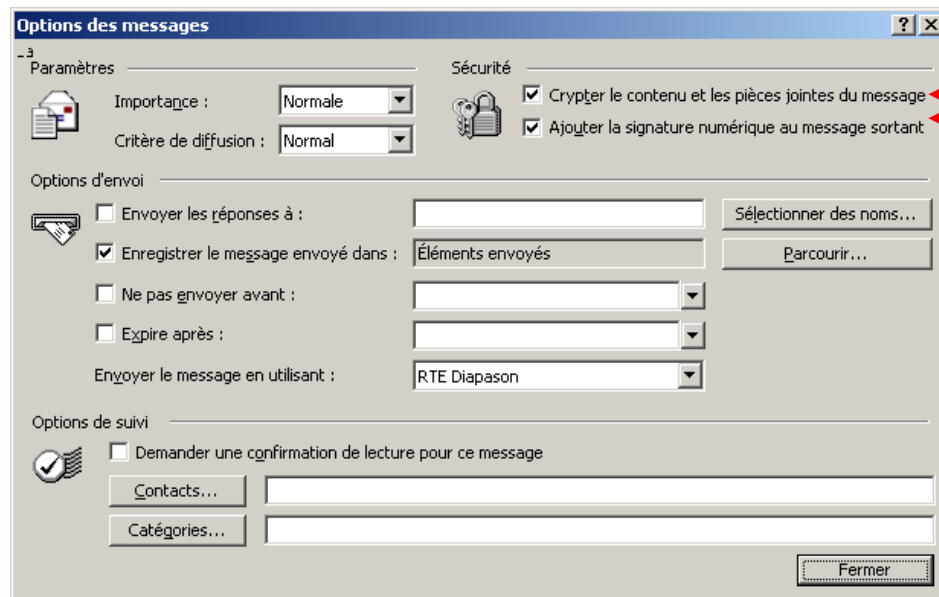
6.1.2.3 Message encryption and signing

To encrypt and sign a message with Outlook, first create a new message by clicking on "New" (or Ctrl+N),

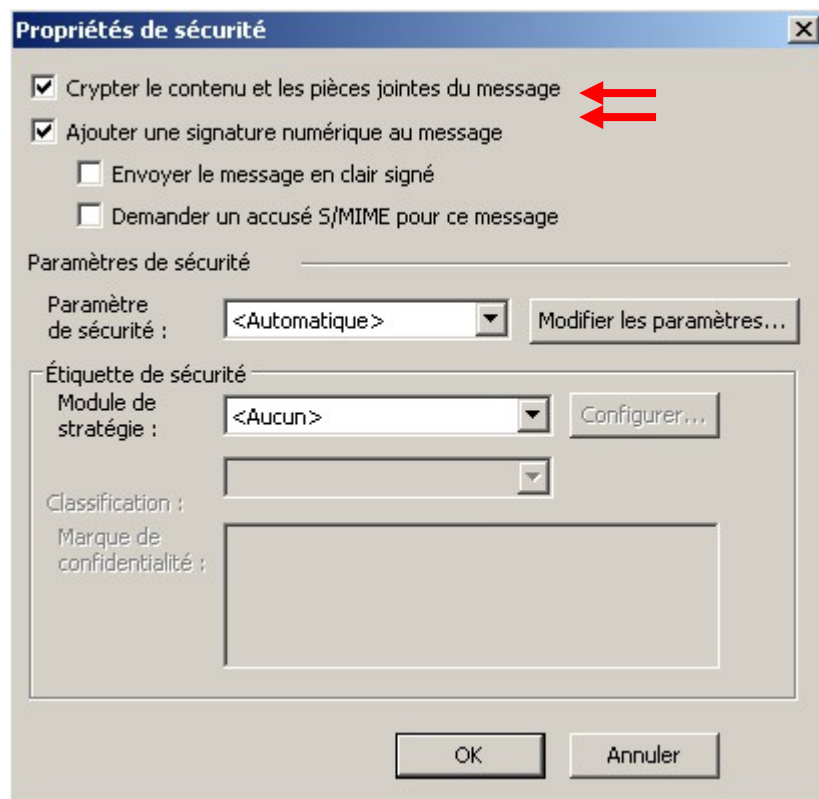
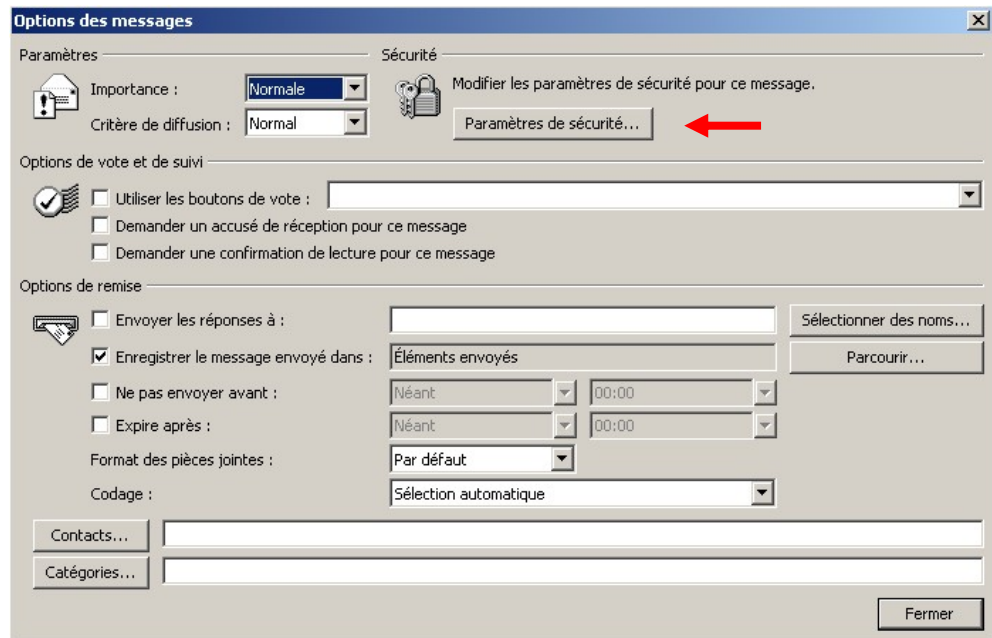


To verify the security parameters, click on the "Options..." button.

In Outlook 2000 with XP, verify that the "Encrypt the contents of messages and attached documents" and "Add the digital signature to outgoing messages" boxes have been checked by default.



In Outlook 2003, click on the "Security parameters" button, then verify that the "Encrypt the contents of messages and attached documents" and "Add the digital signature to outgoing messages" boxes have been checked by default.



6.2 Outlook Express

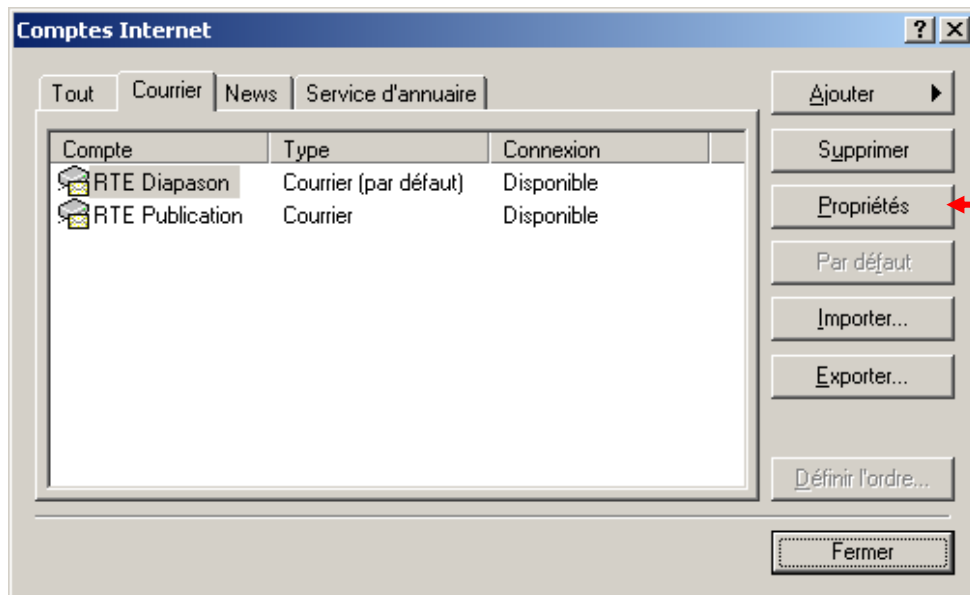
6.2.1 Configuration



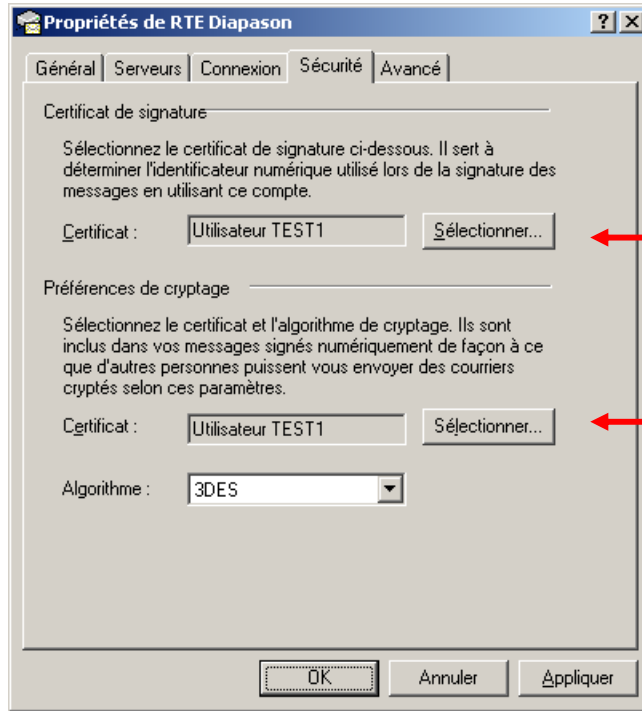
To associate your certificate with your email account under Outlook Express, your certificate must be installed under Internet Explorer. This is automatically the case if you have downloaded it in Internet Explorer; but if you downloaded it with Mozilla Firefox, you must export it from that browser and import it into Internet Explorer, with the corresponding private key and the RTE CA root certificate. Refer to the section at the end of this document.

Outlook Express automatically associates an account with the certificate carrying the same email address in order to sign messages.

To configure Outlook Express, start the "Tools > Accounts..." menu option and select the "Email" tab:

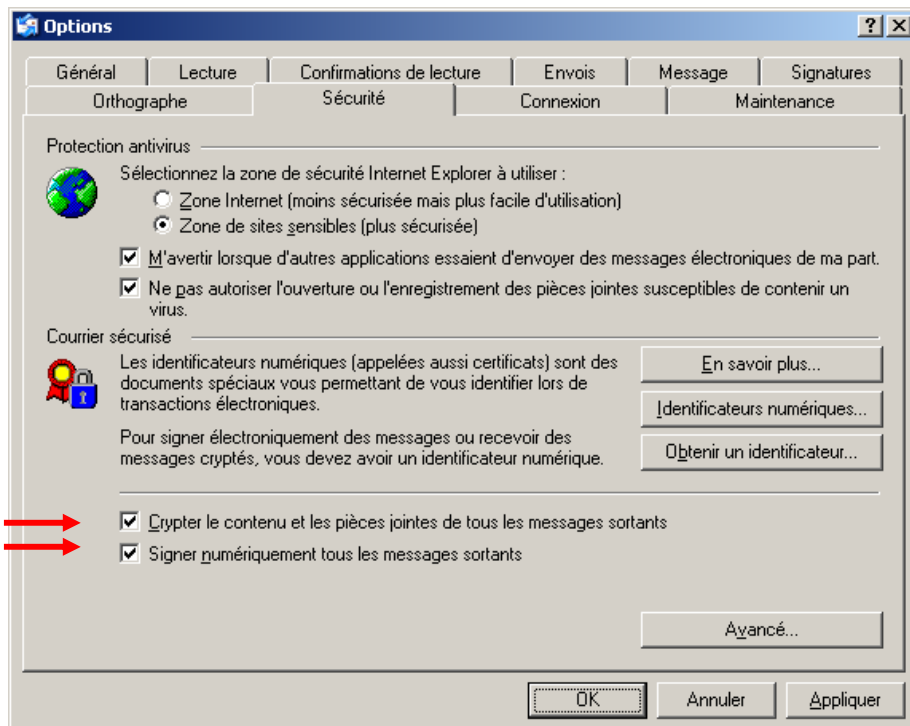


Select your RTE communications account and click on "Properties":



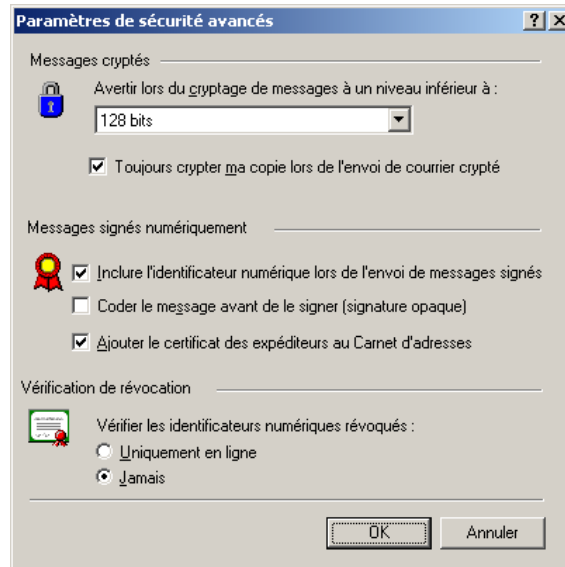
Then click on the "Security" tab, and use the two "Select..." buttons to select your certificate for signing and encryption. Then click on "OK".

Still from within Outlook Express, start the "Tools > Options..." menu:



Select the "Security" tab, check the two checkboxes labelled "Encrypt the contents of messages and attached documents for outgoing messages"

and "**Digitally sign all outgoing messages**", and then click on the "Advanced" button:



Verify that the configuration is identical to that above; please specifically check the two boxes labelled "Include the digital identification when sending messages" and "Add the certificate of senders to the address book" have been checked; then click on "OK".

All your emails destined for RTE applications and sent from this account will now be encrypted and signed.

6.2.2 User Guide

6.2.2.1 When to use the certificate

By using your certificate, you can:

- authenticate yourself to RTE applications;
- sign and encrypt emails destined for RTE applications;
- decrypt electronic messages that have been sent to you by RTE applications.

The encryption and signature of a message are two distinct processes: you sign a message with your own certificate whereas you encrypt it with the recipient's certificate. The recipient's certificate can be obtained in several ways. The RTE applications send you their certificates by sending you a signed message: this is the way that you obtain a copy of their certificates.

To do this, when you receive a signed message, use the "Add to contacts" function to save its certificate as you read it, and you can then use it later to send the application encrypted messages.

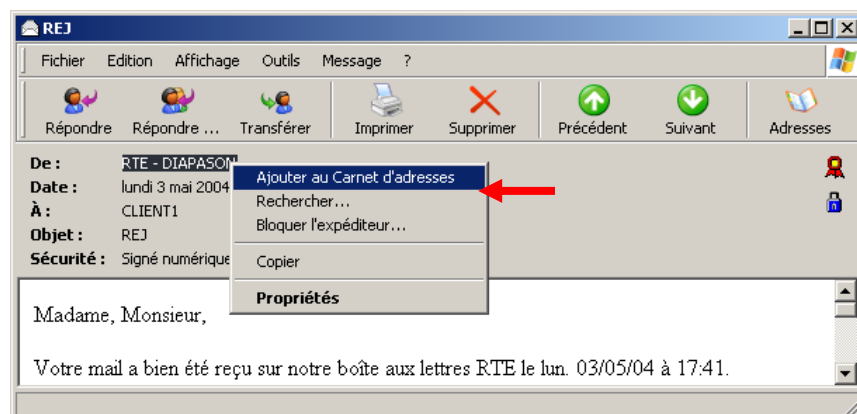
The decryption of a message is done in an automatic manner when you already have the email sender's certificate and if you open that message with a message client that supports S/MIME format secured messages, which Outlook 2000 does.

IMPORTANT NOTE

The encryption of a message is dependent on the possession of a valid certificate corresponding to the recipient's email address.

6.2.2.2 Application certificates

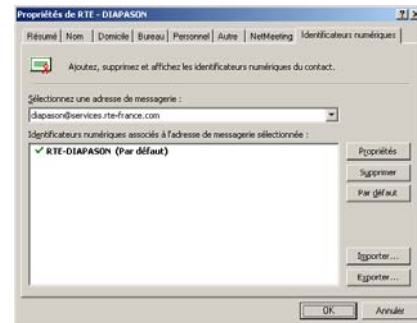
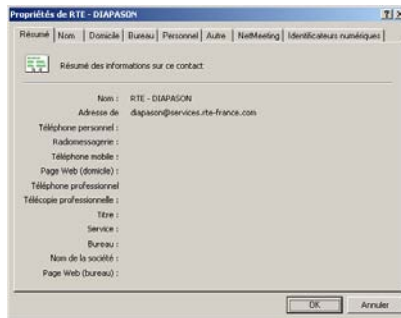
Upon receiving the first signed and encrypted message from an application, you should install the sending application's certificate. To do so, you must add the application's email address to your address book by clicking on "**Add to the address book**" with the right mouse button when positioned over the sender's name of the message received:



The "Summary" tab:

The "Digital identifiers" tab:

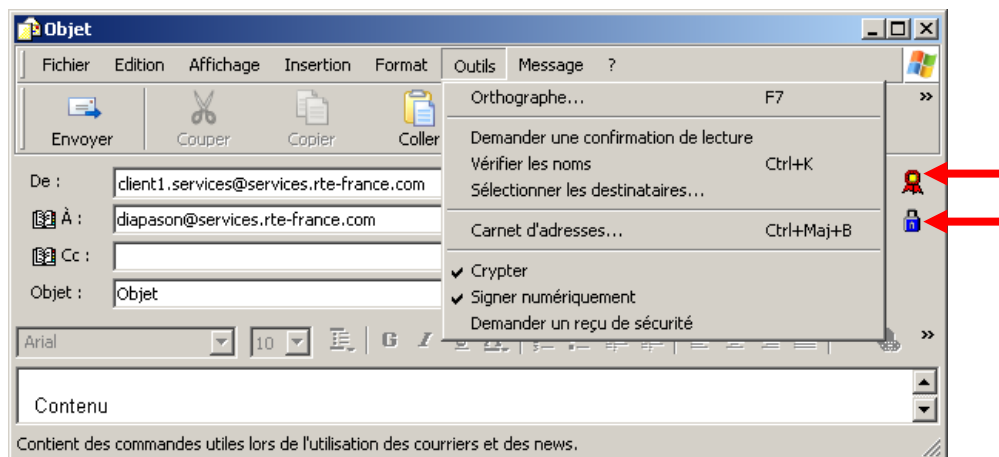
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Click on the "OK" button to validate.

6.2.2.3 Message encryption and signing

To encrypt and sign a message with Outlook Express, first create a new message by clicking on "New" (or Ctrl+N),



Verify that the two boxes "Encrypt" and "Sign digitally" have been checked,

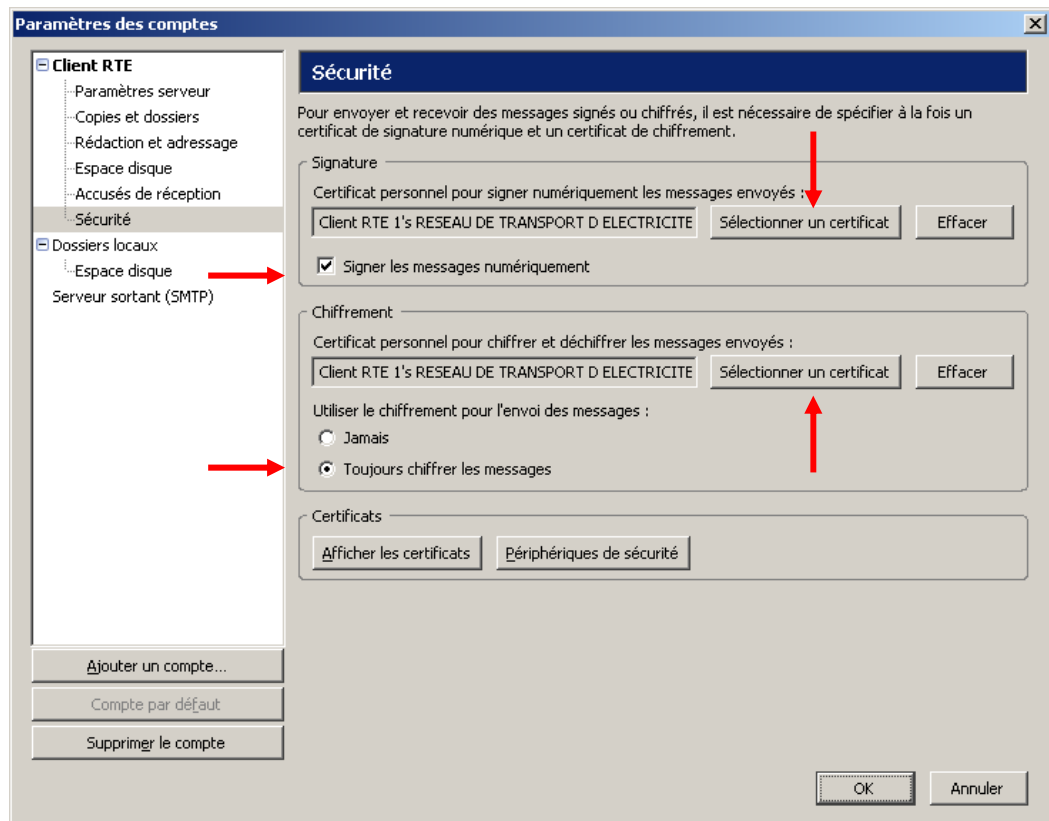
6.3 Mozilla Thunderbird



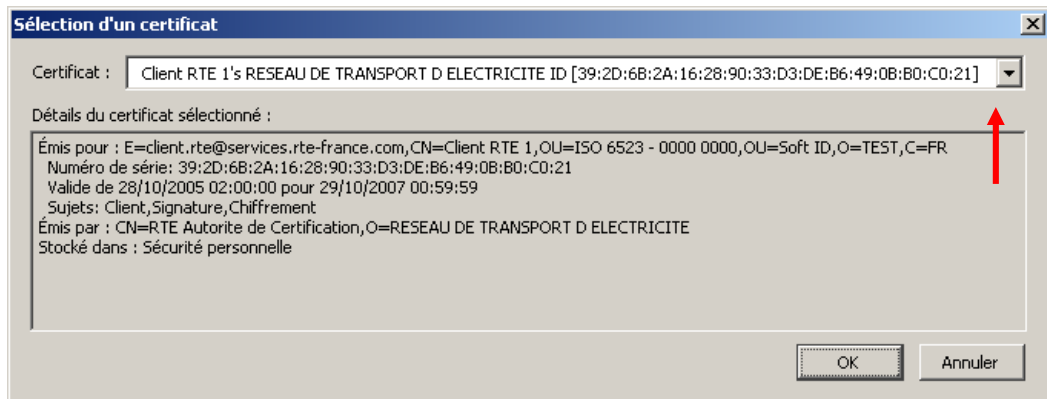
6.3.1 Configuration

To be able to associate your certificate with your email account under Mozilla Thunderbird, your certificate must be installed under Mozilla Thunderbird. To do this, you must export it from the browser that you installed it into, and import it into Mozilla Thunderbird, with the corresponding private key and the RTE CA root certificate. Refer to the section at the end of this document.

Start Mozilla Thunderbird, and open the "**Tools > Account parameters...**" menu, then select the "**Security**" item of the RTE communications accounts (e.g. "Client RTE 1"):



Click on "**Select a certificate**" to select (see above) your certificate for signing and encryption. Then check the two boxes labelled "**Sign messages digitally**" and "**Always encrypt messages**", then click on "OK".



All your emails destined for RTE applications sent from this account will now be encrypted and signed.

6.3.2 User Guide

6.3.2.1 When to use the certificate

By using your certificate, you can:

- authenticate yourself to RTE applications;
- sign and encrypt emails destined for RTE applications;
- decrypt electronic messages that have been sent to you by RTE applications.

The encryption and signature of a message are two distinct processes: you sign a message with your own certificate whereas you encrypt it with the recipient's certificate. The recipient's certificate can be obtained in several ways. The RTE applications send you their certificates by sending you a signed message: this is the way that you obtain a copy of their certificates.

To do this, when you receive a signed message, use the "Add to contacts" function to save its certificate as you read it, and you can then use it later to send the application encrypted messages.

The decryption of a message is done in an automatic manner when you already have the email sender's certificate and if you open that message with a message client that supports S/MIME format secured messages, which Mozilla Thunderbird does.

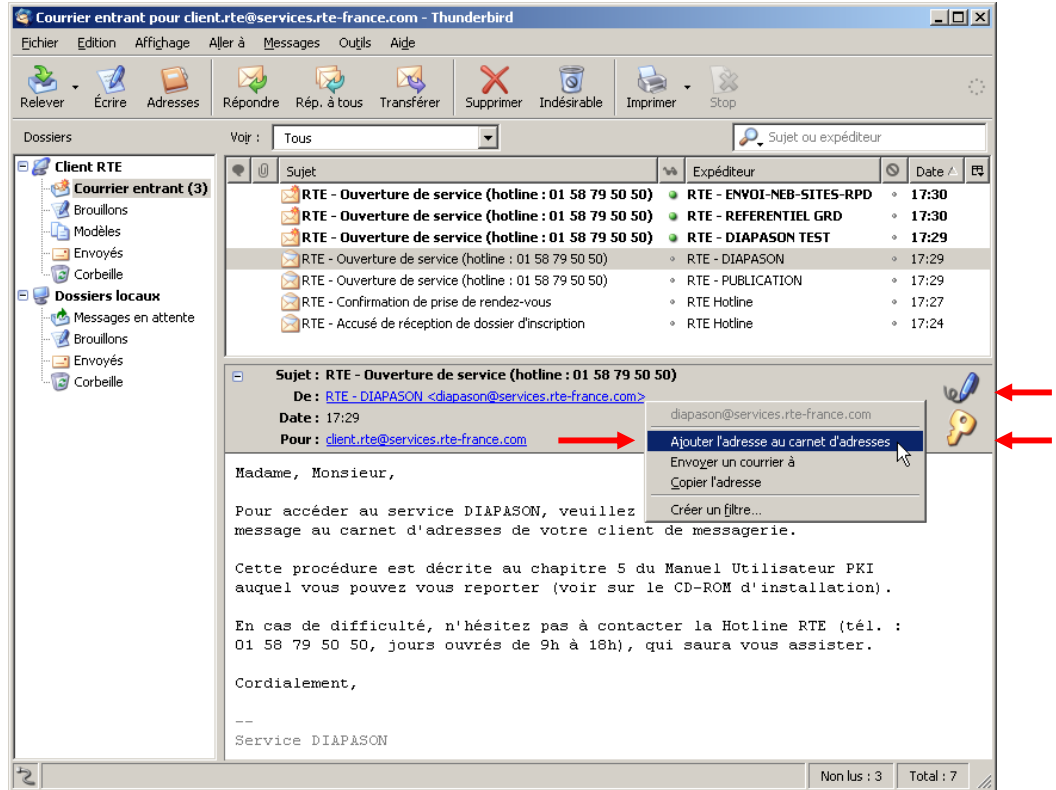
IMPORTANT NOTE

The encryption of a message is dependent on the possession of a valid certificate corresponding to the recipient's email address.

6.3.2.2 Application certificates

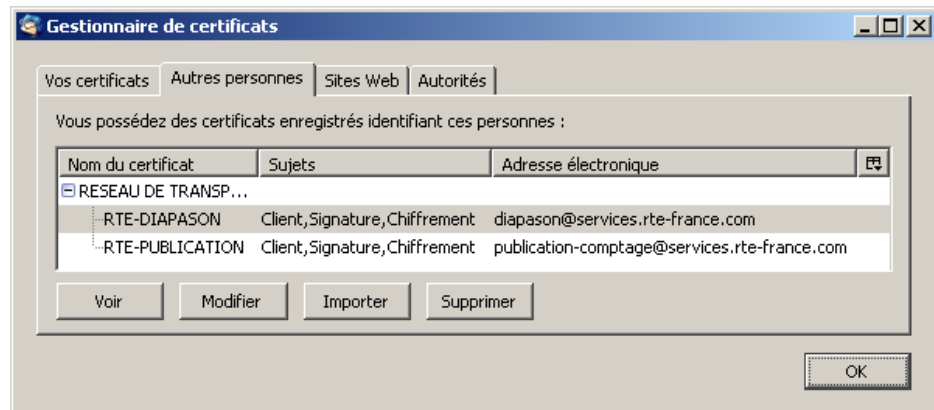
The installation of an application certificate is done automatically when the first email signed and encrypted sent by that application is read.

Nevertheless, you can add the application's email address to your address book by clicking on **"Add this address to the address book"**.



Whenever you see the window "New file for [RTE - DIAPASON]" appearing, just click on "OK".

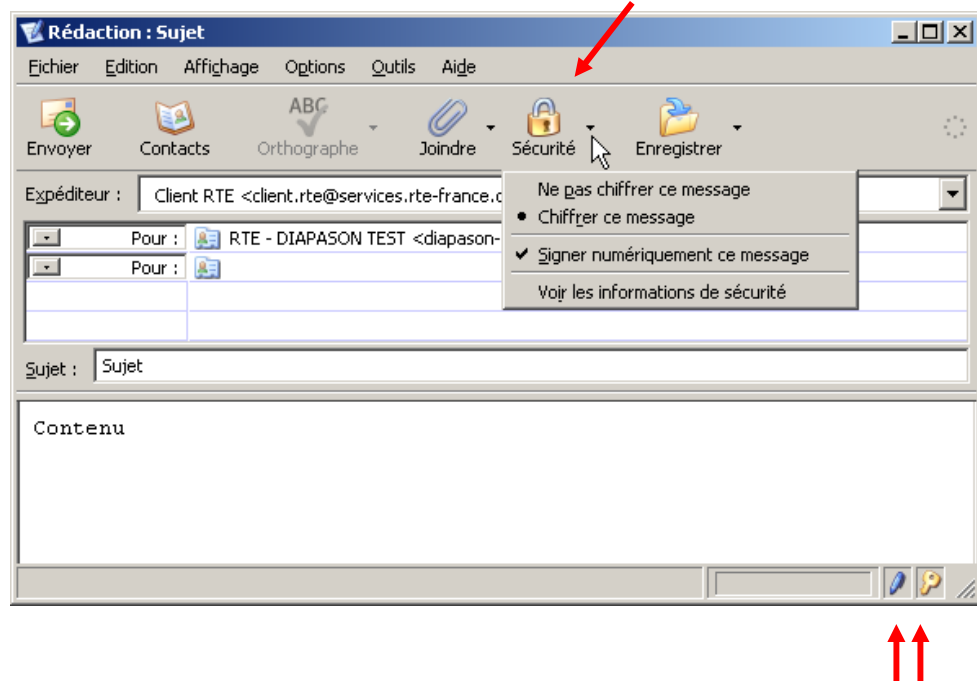
To verify that the application certificate (e.g. "RTE - DIAPASON") is correctly installed, open the "Tools > Options..." menu, select the "Confidentiality" section and the "Security" tab, then click on "View the certificates" and finally click on the "Other people" tab.



6.3.2.3 Message encryption and signing

To encrypt and sign a message with Mozilla Thunderbird, first create a new message by clicking on "Write" (or Ctrl+M),

Click on the "Security" button to make sure the two options "**Encrypt this message**" and "**Digitally sign this message**" have been selected (these options ought to be selected by default).



6.4 Lotus Notes

Please refer to the document titled: "**PKI User Manual - digital certificates - Windows XP Notes**".

7. SSL VPN

7.1 Foreword

Connection via SSL VPN is a service which offers the establishment of a secured communications channel to RTE FrontOffice through the Internet. This channel is established after authentication of your certificate with a dedicated site.

The use of SSL VPN requires the installation of a special tool which is installed during your first connection to the site. This application is called **Windows Secure Application Manager (WSAM)**.

The SSL VPN makes it possible to access email folders hosted in RTE FrontOffice.

The connection URL for the SSL VPN is:

<https://secure.iservices.rte-france.com>

7.2 Initial configuration

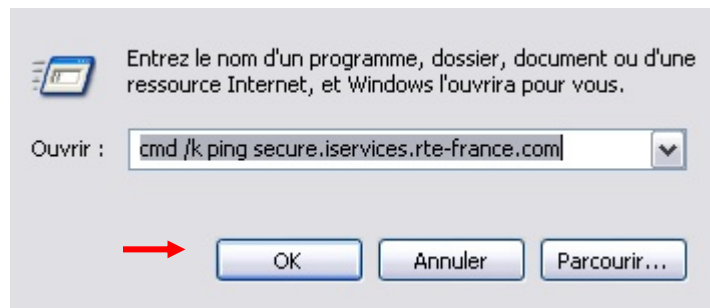
7.2.1 Prerequisites

Even before making your first connection, you must have:

- configured your workstation (§2),
- configured your browser and retrieved your certificate:
 - §5 for Mozilla Firefox (max version: 2.0.0.14),
 - §3 for Internet Explorer 6,
 - §4 for Internet Explorer 7,

You must also verify that your workstation is able to resolve and access the address: **secure.iservices.rte-france.com**. To do this, open your Start menu and click on Run. In the window that appears, enter this command:

cmd /k ping secure.iservices.rte-france.com



Click on the "OK" button.

A window will appear containing some information:

- If the first line starts with "**Sending a ping request to secure.iservices.rte-france.com**", then the address

secure.iservices.rte-france.com has been resolved. Your workstation is correctly configured.

- If the first line starts with "**The ping request could not locate the server secure.iservices.rte-france.com**", then the address **secure.iservices.rte-france.com** has not been resolved. Please contact your IT support desk so that they can make the necessary changes to enable the ping/address resolution.

IMPORTANT

For your first connection, you must have an account with administrative rights so that the WSAM application installation can be made.

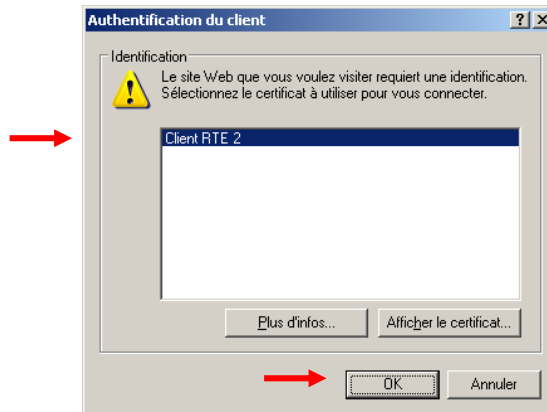
7.2.2 First connection

7.2.2.1 Internet Explorer

Start your browser and enter the following URL:

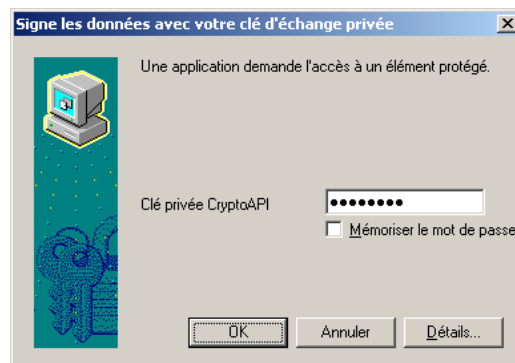
https://secure.iservices.rte-france.com

This window will be displayed:



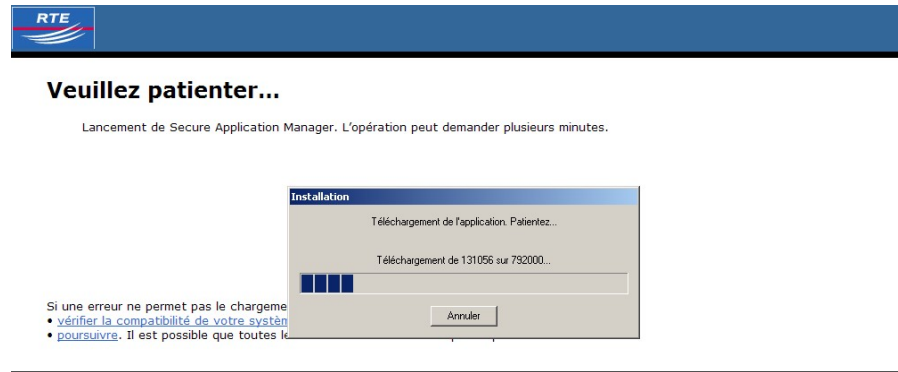
Select your certificate, then click on the "**OK**" button.

If necessary, this window will ask you for the store password for your certificate.



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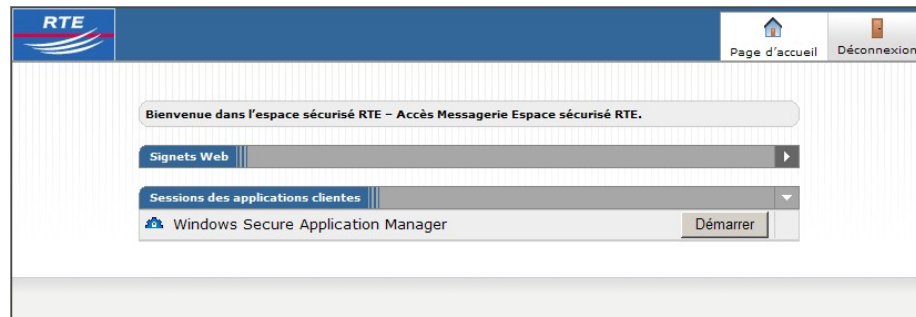
Then the WSAM application installation will start:




Please be patient through the entire installation procedure.

If your Internet access requires authentication with a proxy, a window will appear asking you for your connection identification credentials. Enter them and validate.

Once the installation has completed, the following page will be displayed:



Finally, the  icon will appear in your task bar,

Click on the **Disconnect** button (on the top right of the page) to terminate the session:

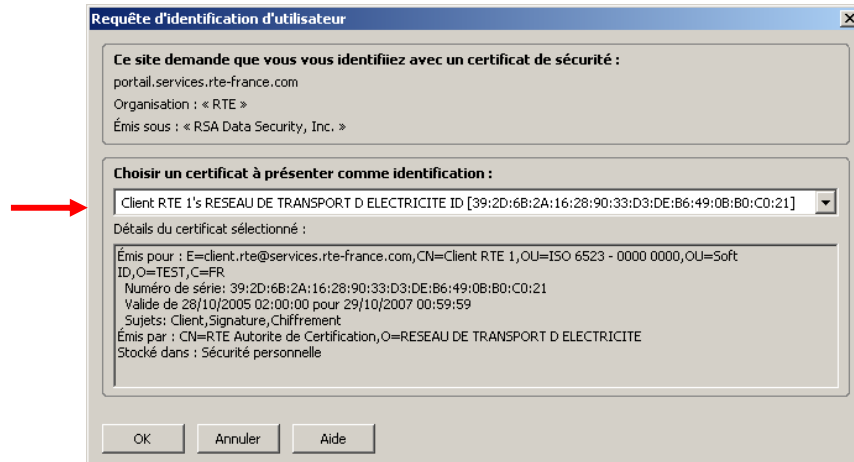


7.2.2.2 Mozilla Firefox

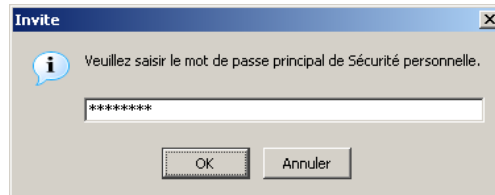
Start your browser and enter the following URL:

<https://secure.iservices.rte-france.com>

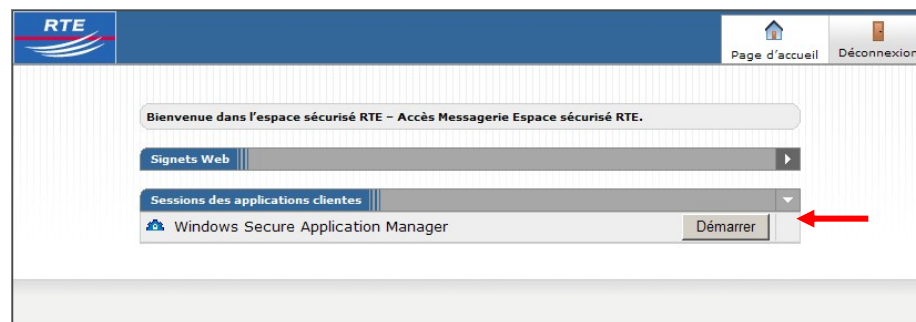
This window will be displayed:



Select your certificate from the dropdown list labelled "Choose a certificate to present as identification" and click on "OK". If necessary, this window will ask you for the password to the Mozilla Firefox certificate store.



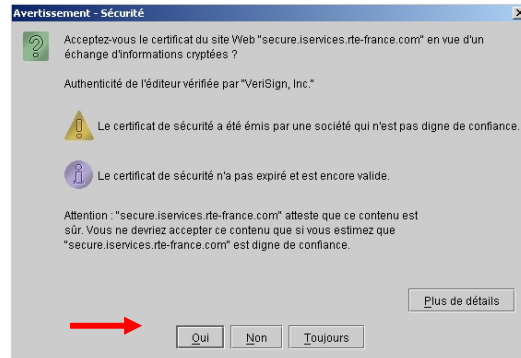
Then the following page will be displayed:



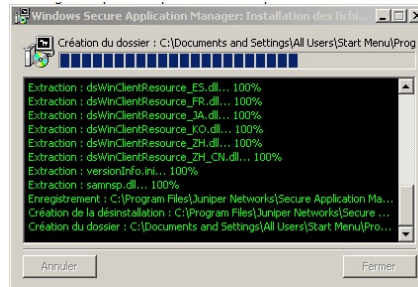
Click on the "Start" button to commence the installation.

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If this window below appears, just click on **Yes**.

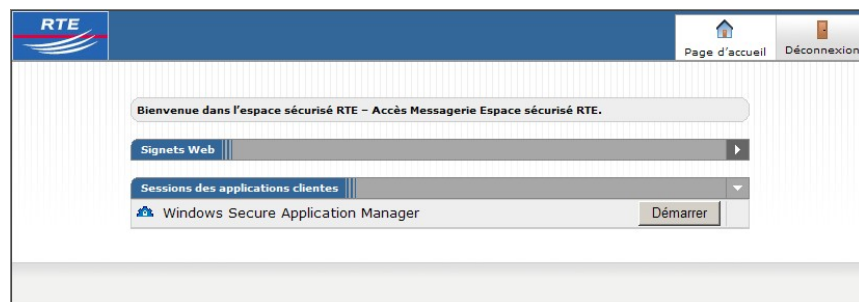


Please be patient through the entire installation procedure:



If your Internet access requires authentication with a proxy, a window will appear asking you for your connection identification credentials. Enter them and validate.

Once the installation has finished, the welcome page will be shown again:



In addition, the  icon will appear in your task bar,

Click on the **Disconnect** button (on the top right of the page) to terminate the session:



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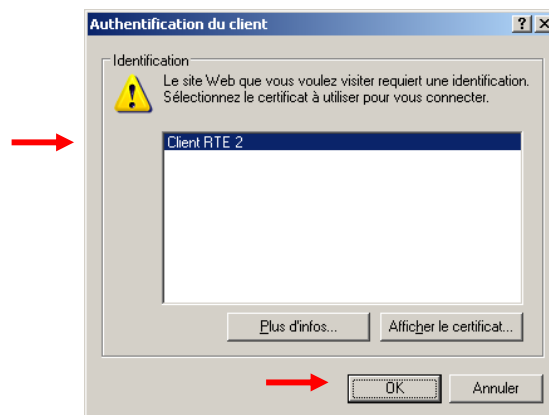
7.3.1 Establishing a connection

7.3.1.1 Internet Explorer

Start your browser and enter the following URL:

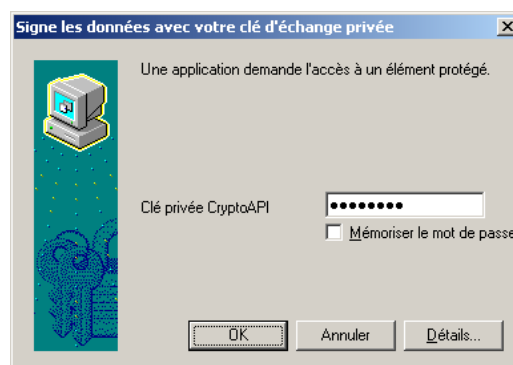
<https://secure.iservices.rte-france.com>

This window will be displayed:

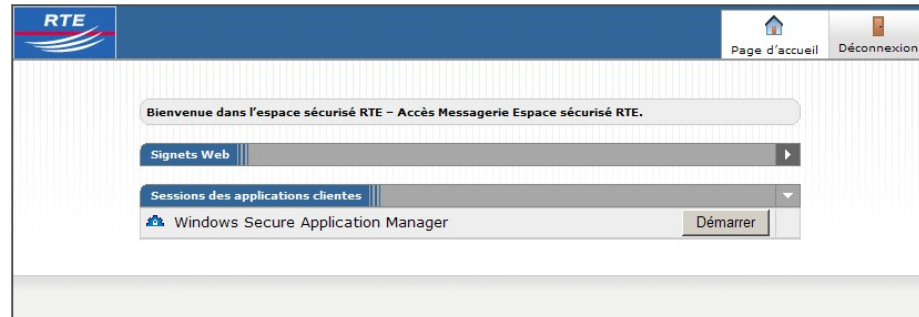



Select your certificate, then click on the "OK" button.

If necessary, this window will ask you for the store password for your certificate.



The WSAM application automatically starts and the following page is displayed:



In addition, the  icon will appear in your task bar,

Notes:

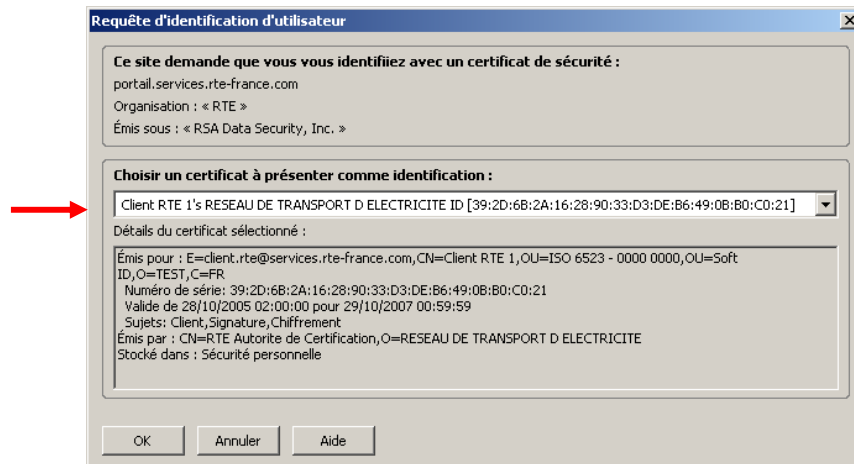
- The certificate is only used to establish the SSL VPN connection.
- To close the SSL VPN session, click on the Disconnect button (on the top right of the page).

7.3.1.2 Mozilla Firefox

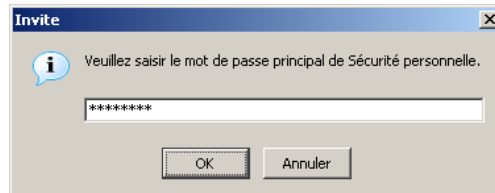
Start your browser and enter the following URL:

<https://secure.iservices.rte-france.com>

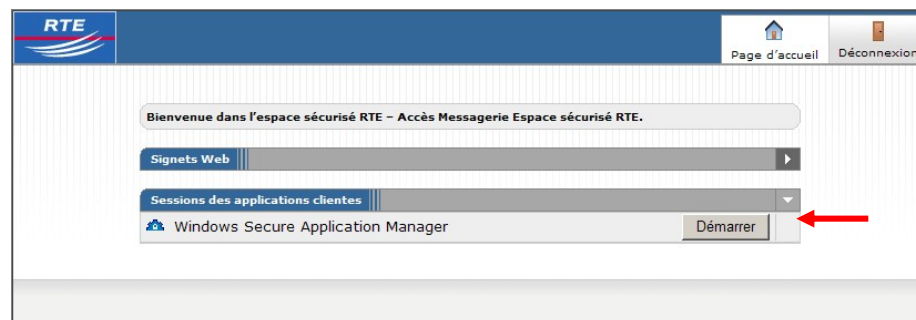
This window will be displayed:



Select your certificate from the dropdown list labelled "Choose a certificate to present as identification" and click on "OK". If necessary, this window will ask you for the password to the Mozilla Firefox certificate store.



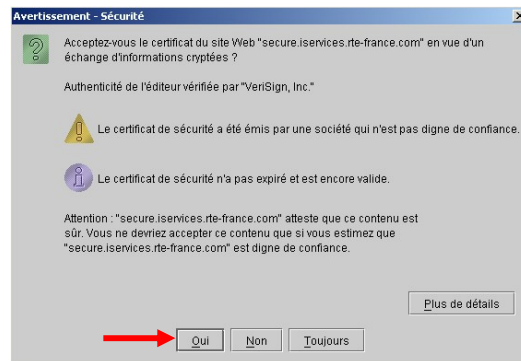
Then the following page will be displayed:



Click on the "**Start**" button to start the WSAM application.

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If this window below appears, just click on **Yes**.



If your Internet access is protected by a proxy, a window will appear asking you for your connection identification credentials. Enter them and validate.

Once the application has started, the  icon will display in your task bar.

Notes:

- The certificate is only used to establish the SSL VPN connection.
- To close the SSL VPN session, click on the Disconnect button (on the top right of the page).

7.3.2 Using SSL VPN to access hosted email folders

SSL VPN can be used to access email folders hosted in FrontOffice with the use of a standard email client.

Access to the hosted email folders requires that the SSL VPN connection has been established (see §7.3.1).

The configuration of the email account in your email client software is made in the normal fashion with the following parameters:

- Email server type: POP server
- POP server address: **pop.services.rte-france.com**
- SMTP server address: **smtp.services.rte-france.com**

When your access to RTE FrontOffice is supplied to you, you will receive your login identifier, your password and your email address.

NOTE

Given that the messages are being forwarded through a secure channel, the sending and receipt of emails does not require the use of a certificate for message encryption.



8. Renewal of certificates

Certificates have a validity of two years so that a high level of security can be delivered with them.

Forty days before the expiry of a certificate, an electronic message is sent to the certificate holder to inform him of the renewal of his digital certificate.

If modifications need to be made relating to the certificate holder's details, then the certificate holder's representative contacts the RTE customer relations officer to tell him what those changes are.

Otherwise an email is sent to the certificate holder with the information necessary for the retrieval of his new certificate.



9. Revocation of certificates

9.1 The revocation scenario

The customer must issue a revocation request whenever one of the following circumstances arises:

- change of the certificate holder;
- loss, theft, compromise, or suspicion of possible, probable or certain compromise of the private key associated with the holder's certificate;
- death or discontinuation of employment of the certificate holder;
- loss of the activation data, or defective or lost removable media.

9.2 The revocation request

To revoke your certificate, you should call the RTE Hotline and supply your **PKI User Authentication**, such as was provided in the forms for requesting access to the RTE IT systems.

10. Incident handling and support

In the event of a problem, the customer contacts the RTE Hotline (see §10.2), who will diagnose the problem and forward it to the corresponding technical expert concerned. The Hotline will forward the solution to the customer and assist them where necessary to apply the procedures indicated to regain access to the RTE IT systems.

10.1 Error codes returned by email

During an exchange of electronic messages, it is possible that a functionality error may occur. In such events, the component (e.g. a server, a router) in question returns an error code by email.

The subjects of the error messages returned by the cryptographic router are of the form:

<ERR:nnn!!<FR Description>!!<EN Description>> <Subject-of-the-original-message>

nnn	Description	Possible cause
001	The email sent by the customer has not been signed nor encrypted	You have not checked the signing and encrypting boxes in your email software when you sent the email
002	The email sent by the customer has only been encrypted	You did not check the signing box in your email software
003	The email sent by the customer has only been signed	You did not check the encrypt box in your email software
004	The email sent by the customer has only been signed and the signature used is incorrect	You did not check the encrypt box in your email software and the certificate that you used to sign the message is invalid or unknown
005	The email sent by the customer has been signed and encrypted, but the signature used is incorrect	The signature certificate that you used is invalid or unknown
006	The email sent by the customer could not be decrypted by RTE	That certificate that you used to encrypt the email is invalid
007	The email sent by RTE did not reach the customer because of a security problem	This is an internal RTE problem



<FR-Description>	Description of the error in French.
<EN-Description>	Description of the error in English.
<Subject-of-the-original-message>	The subject header of the original message that caused the error in question.

10.2 Support

For any information or assistance, the customer can contact the **RTE Hotline** at:

+800 80 50 50 50

or from within France at:

01 55 69 79 52

11. Appendix A – Importing and exporting certificates

The export of your digital certificate, from the navigator under which you downloaded it, with the associated private key and the RTE CA root certificate, constitutes a backup of these elements. The result will be a file in the PKCS*12 standard format, that you will be asked to protect with a password, and that will be required to be put on a removable media and stored in a physically protected location.

This PKCS#12 file can then be imported into the browser of your choice, or into Lotus Notes, in order to either change browser, email client or PC, or to restore your certificate, your key pair and the root certificate in the event of a disk *crash*.

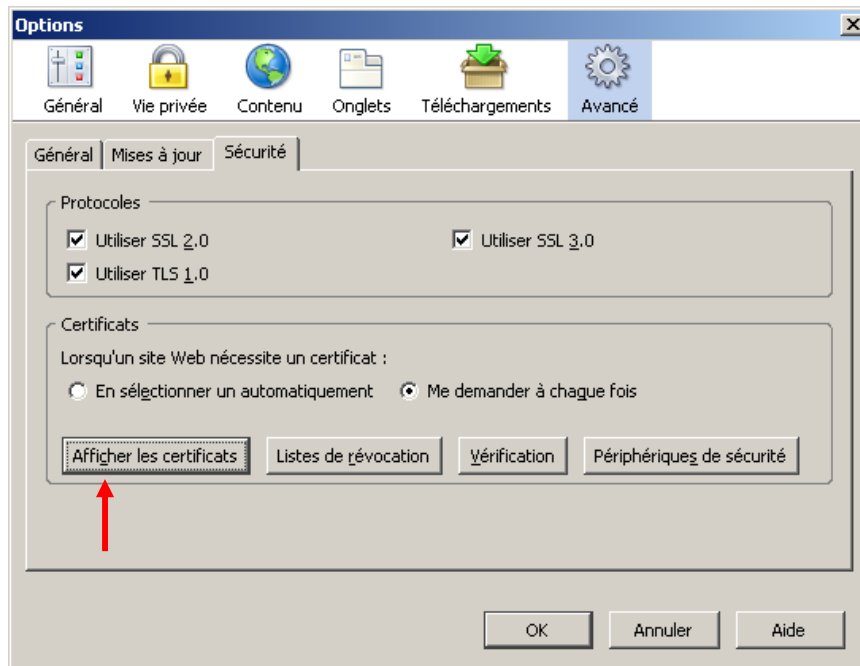
IMPORTANT

When re-importing into **Internet Explorer**, **do not check the checkbox labelled "Mark the key as being exportable"**, so that no one can later perform an export of your private key without your knowledge from this workstation.

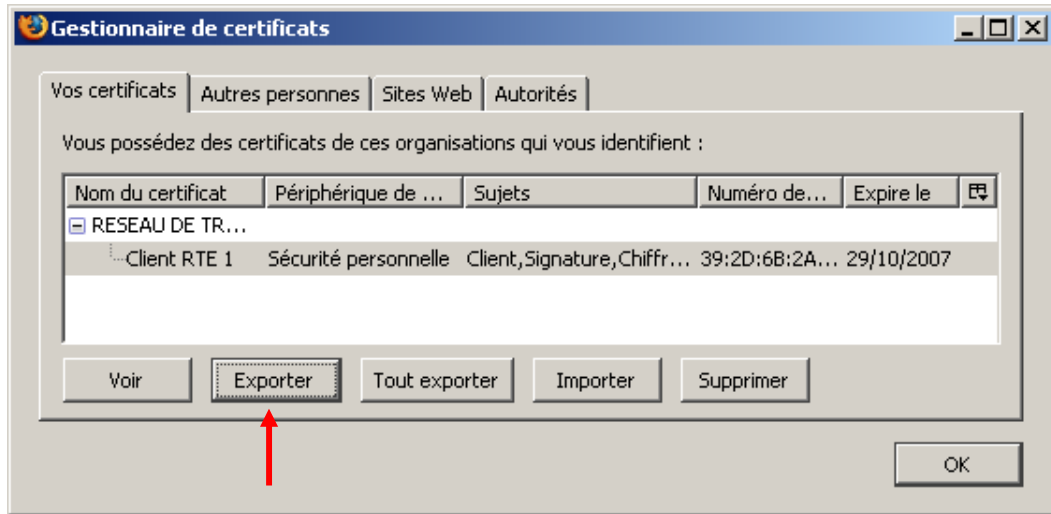
11.1 Exporting a certificate under Mozilla Firefox

Under Mozilla Firefox, export of a certificate with the private key and the root certificate. Once finished, generation of a file in the PKCS#12 (.p12) format protected with a password.

From the "**Tools > Options...**" menu:

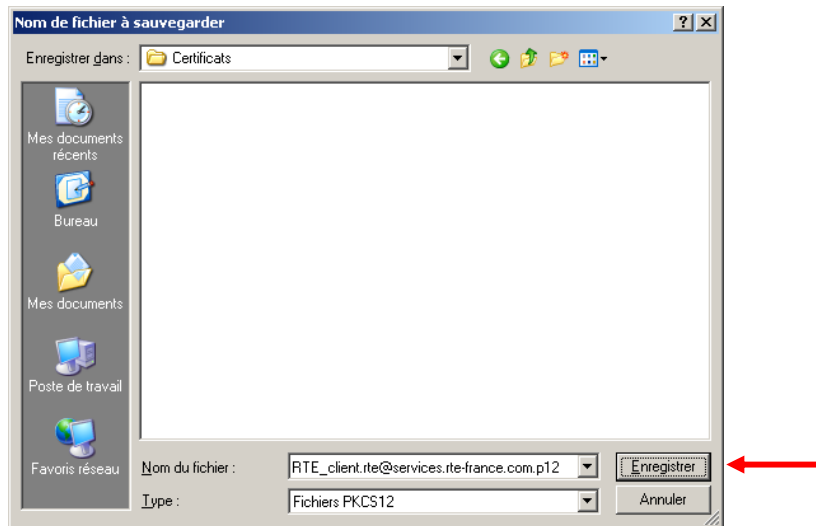


Select "Advanced" > "Security", and click on "Display the certificates".



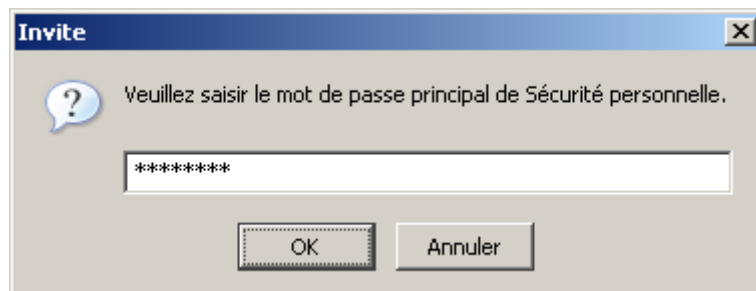
Select your certificate and click on "Export".

Choose a location and a name for the generated file in the PKCS#12 (.p12) format:



Click on the "Save" button.

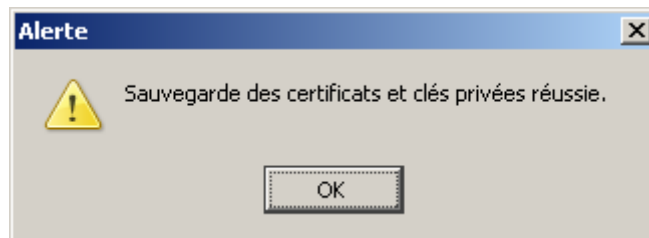
If necessary, this window will ask you for the password to the Mozilla Firefox certificate store:



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Enter a password to restrict access to the PKCS#12 (.p12) file, then click on "OK".

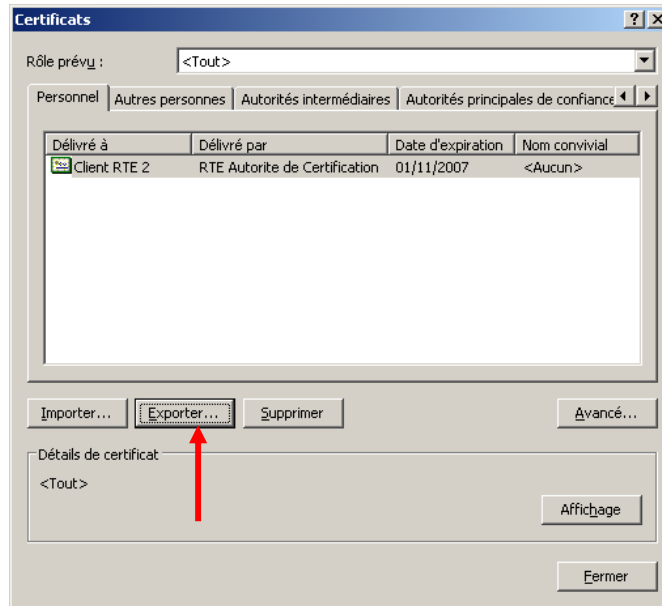


Your certificate, your private key, and the CA root certificate are exported to the generated file with the ".p12" extension.

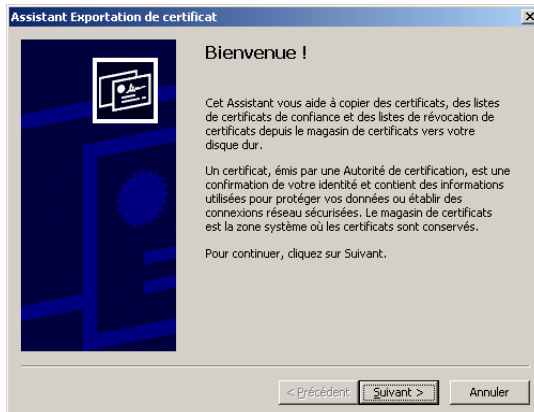
11.2 Exporting a certificate under Internet Explorer (Windows)

Under Internet Explorer, export of a certificate with the private key and the root certificate. Once finished, generation of a file in the PKCS#12 (.p12) format protected with a password.

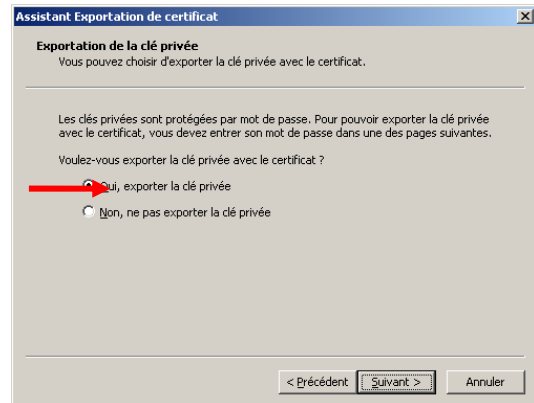
Under Internet Explorer, open up: "**Tools > Internet options...**" and click on the "**Contents**" tab, then on the "**Certificates...**" button:



Select your certificate, then click on "**Export...**".

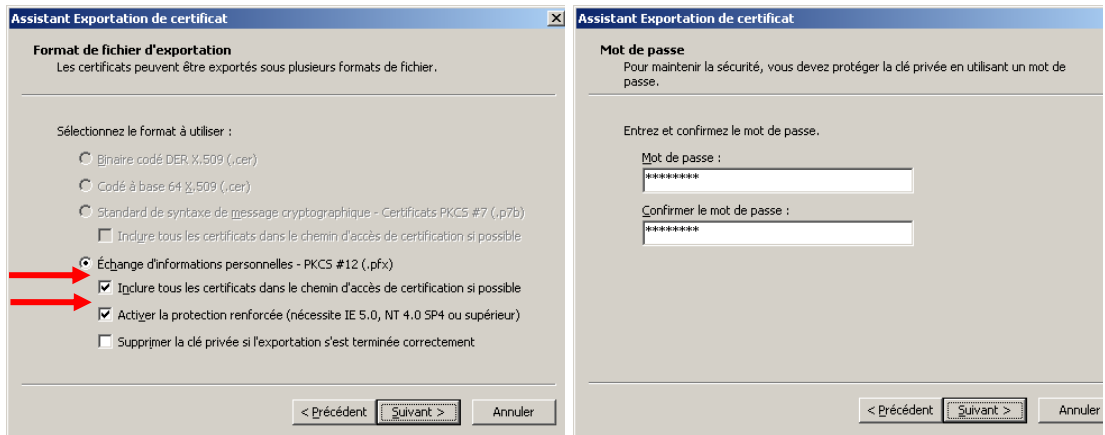


Click on the "**Next**" button.



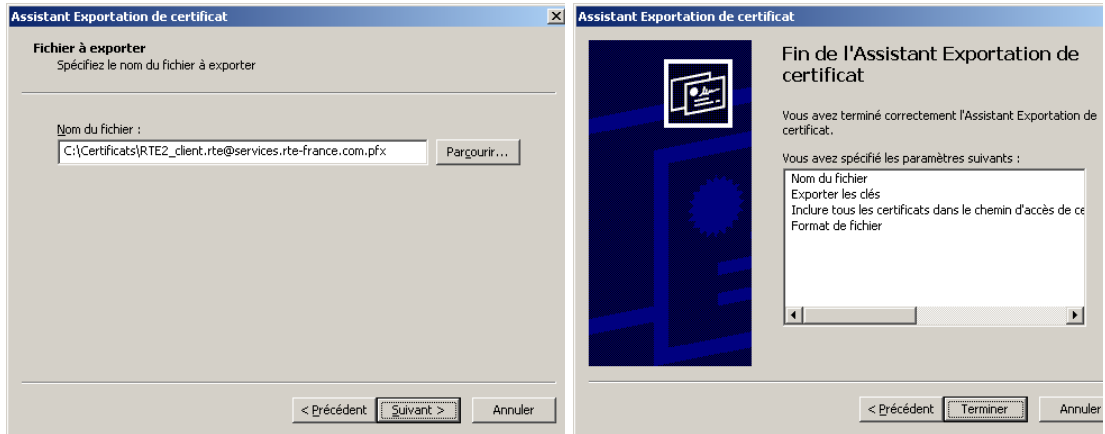
Select "**Yes, export the private key**", then click on the "**Next**" button.

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Select the first two checkboxes, then click on the "Next" button.

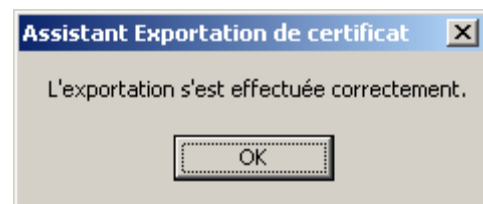
Enter a password to restrict access to the PKCS#12 (.p12) file, then click on "Next".



Enter the name of the PKCS#12 file, then click on the "Next" button.

Lastly, click on the "Finish" button.

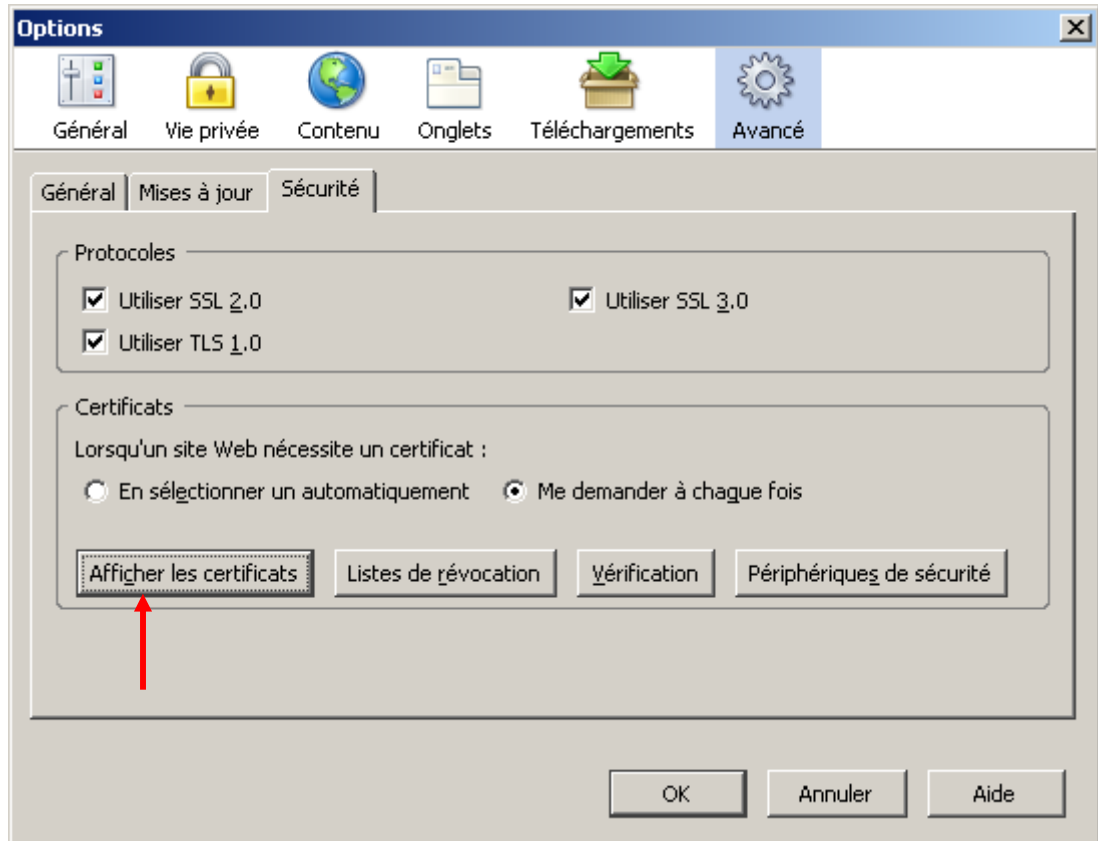
You have just exported into a password protected PKCS#12 standard format file, a combination of your certificate, its private key, and the certificate of the CA root. These elements have therefore been exported, but are still present in the Internet Explorer store.



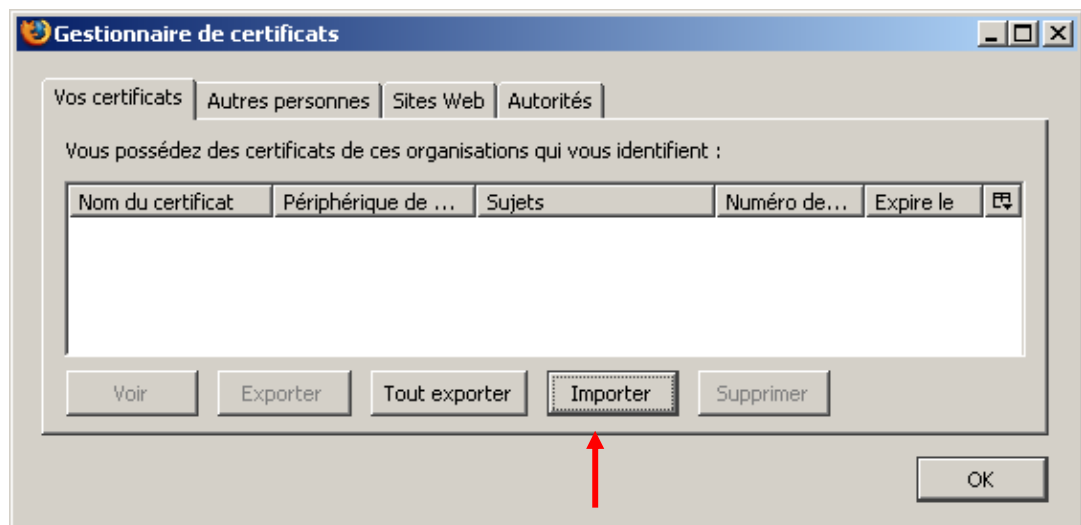
11.3 Importing a certificate into Mozilla Firefox

With Mozilla Firefox, import of a complete PKCS#12 file with the root certificate.

In the "Tools > Options..." menu, select the "Advanced" section and the "Security" tab:



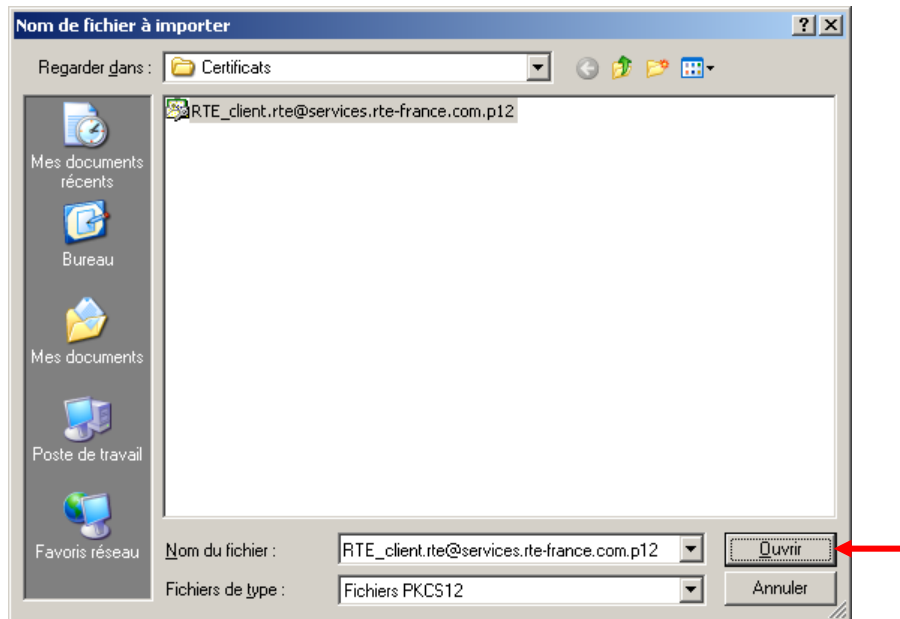
Click on "Display the certificates".



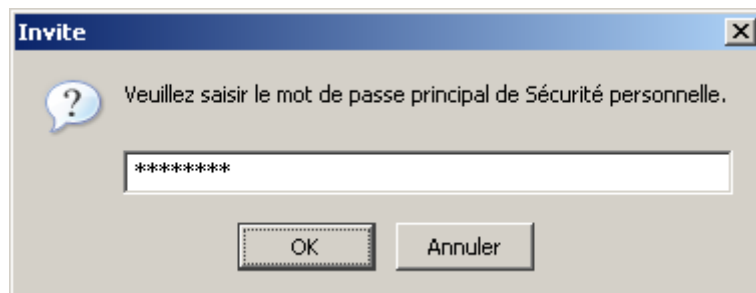
Click on "Import".

Select the PKCS#12 file (with a ".p12" or ".pfx" extension):

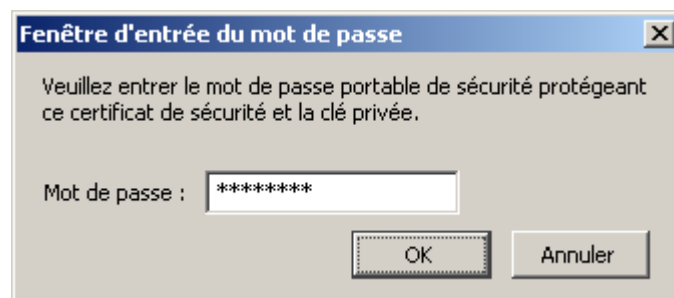
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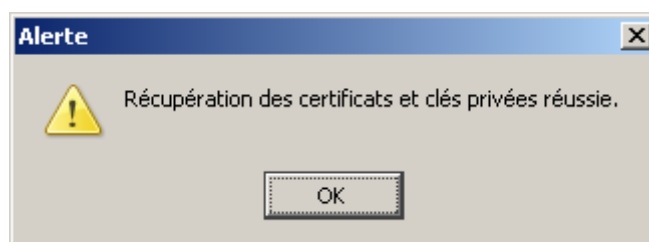
Enter the password to access the Mozilla Firefox certificate store:



Click on "OK".

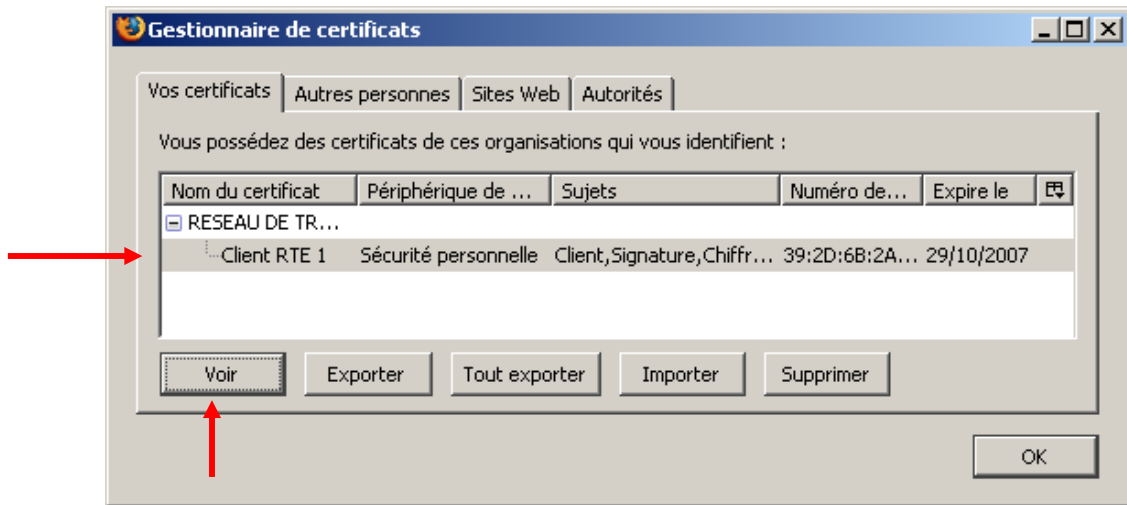


Enter the password restricting access to the PKCS#12 (.p12) file, then click on "OK".

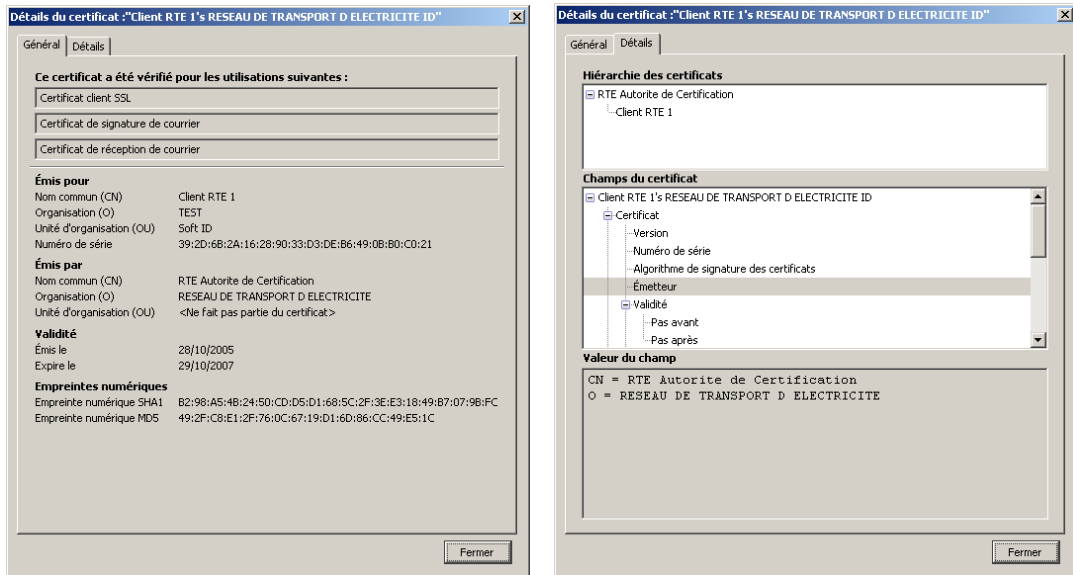


The holder's certificate is now in the Mozilla Firefox certificate store.

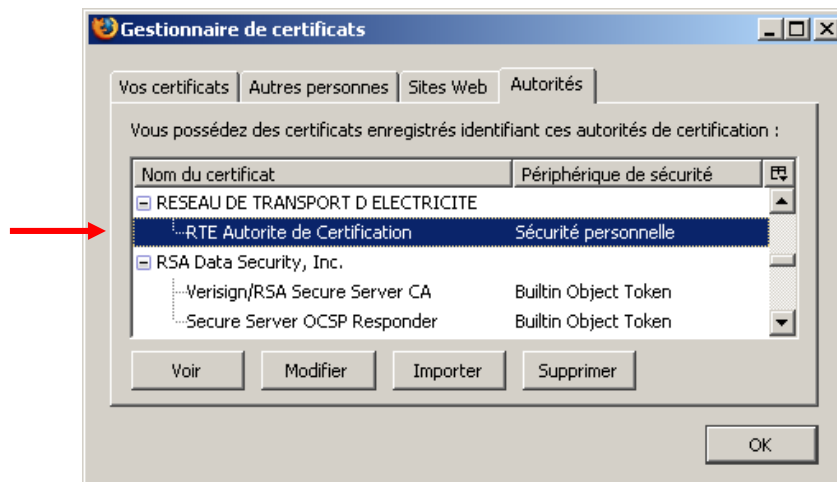
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Check that it's the right one by clicking on the "View" button.



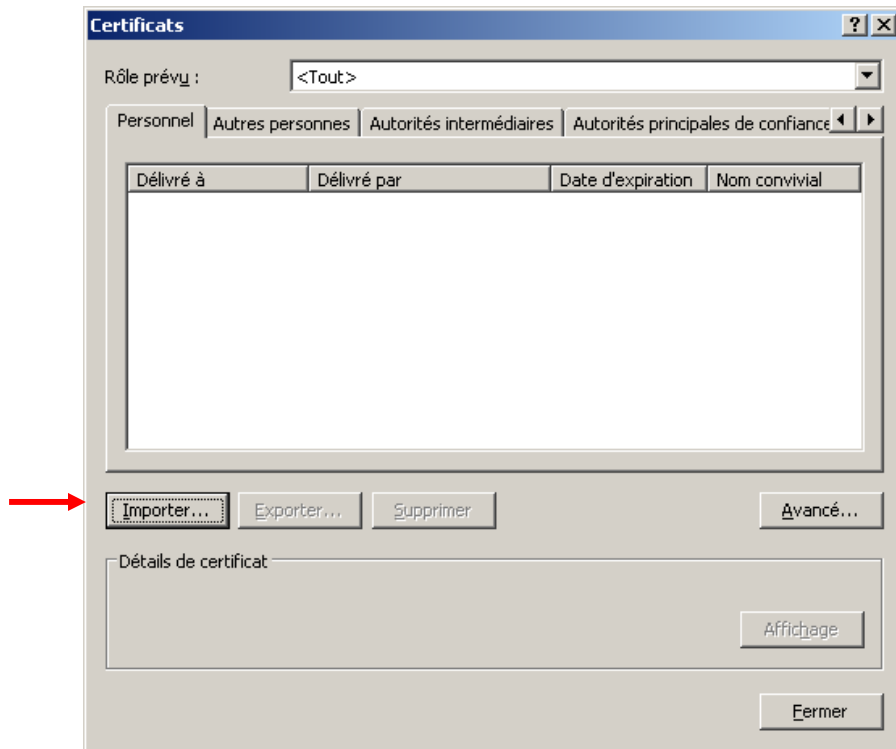
The RTE CA certificate is also in the Mozilla Firefox store:



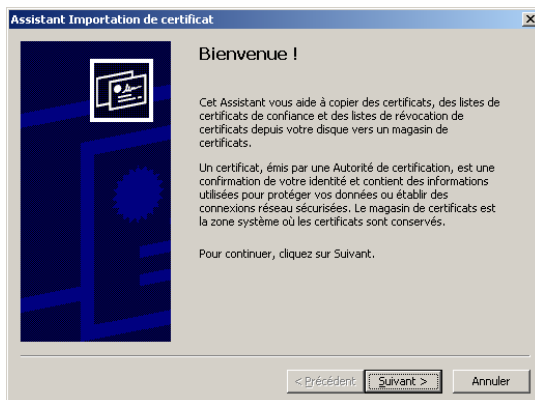
11.4 Importing a certificate into Internet Explorer (Windows)

With Internet Explorer, import of a password protected PKCS#12 file with the root certificate.

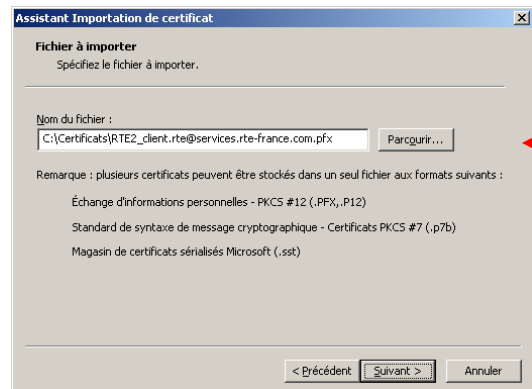
Under Internet Explorer, open up: "**Tools > Internet options...**" and click on the "**Contents**" tab, then on the "**Certificates...**" button:



Click on the "**Import**" button.

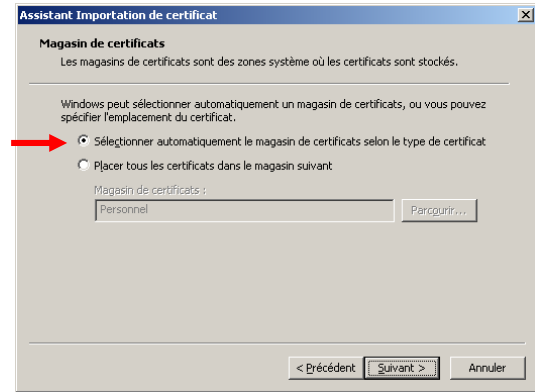
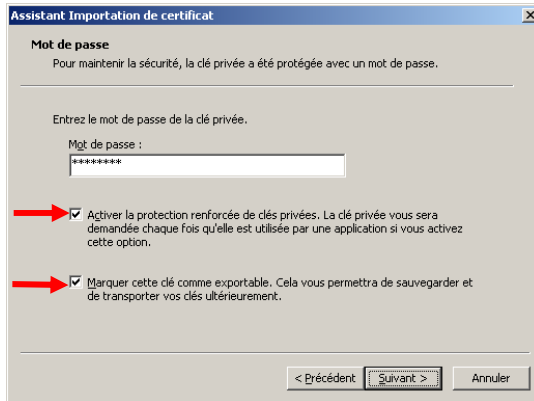


Click on the "**Next**" button.

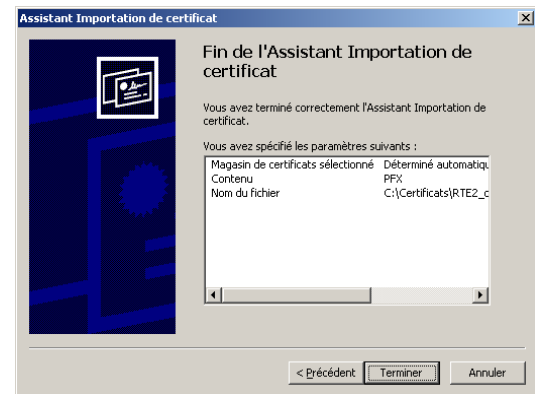


Click on the "**Browse**" button to locate the **PKCS#12 file** (ext. ".p12" or ".pfx"), then click on "**Next**".

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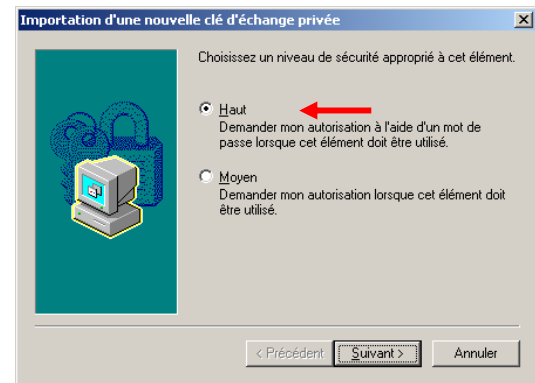
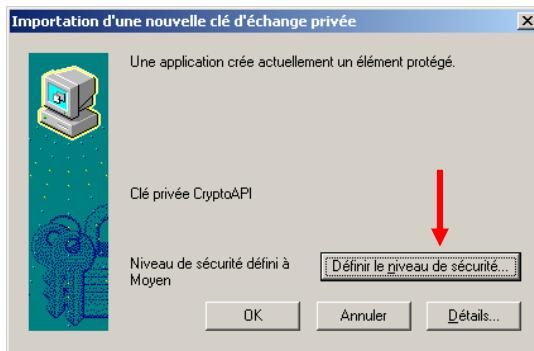


Enter the PKCS#12 file password, check the 2 boxes, then click on "Next".



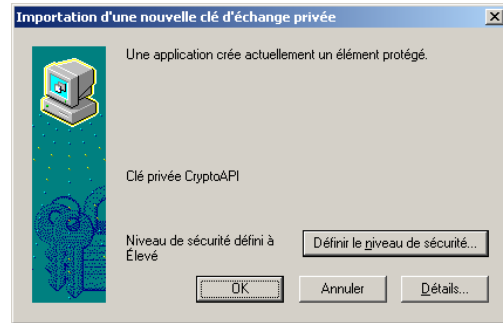
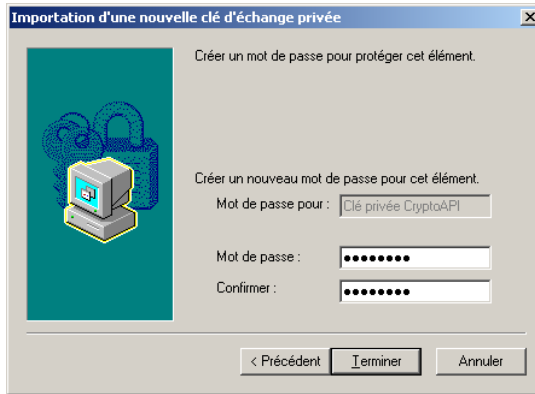
Lastly, click on "Finish".

Select the **security level of the private key** that you are importing with the certificate.



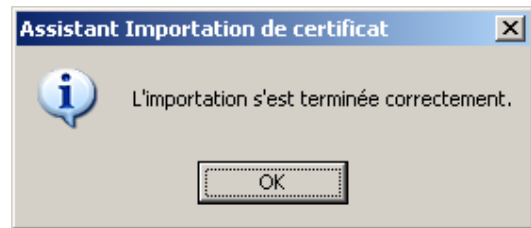
Click on the "Define the security level" button. Select the "High" option, then click on the "Next" button.

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Enter a name for the "key pair" element to protect and a **password**, then click on the "**Finish**" button. Click on the "**OK**" button.

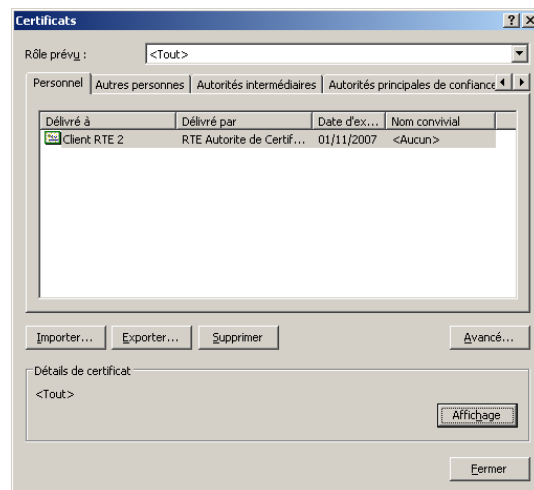
A dialogue box appears showing the elements of the CA root certificate that you are importing with your certificate.



Click on the "**Yes**" button.

Click on the "**OK**" button.

Your **certificate**, your **private key** and the **root certificate** of the RTE CA have been imported into Internet Explorer.

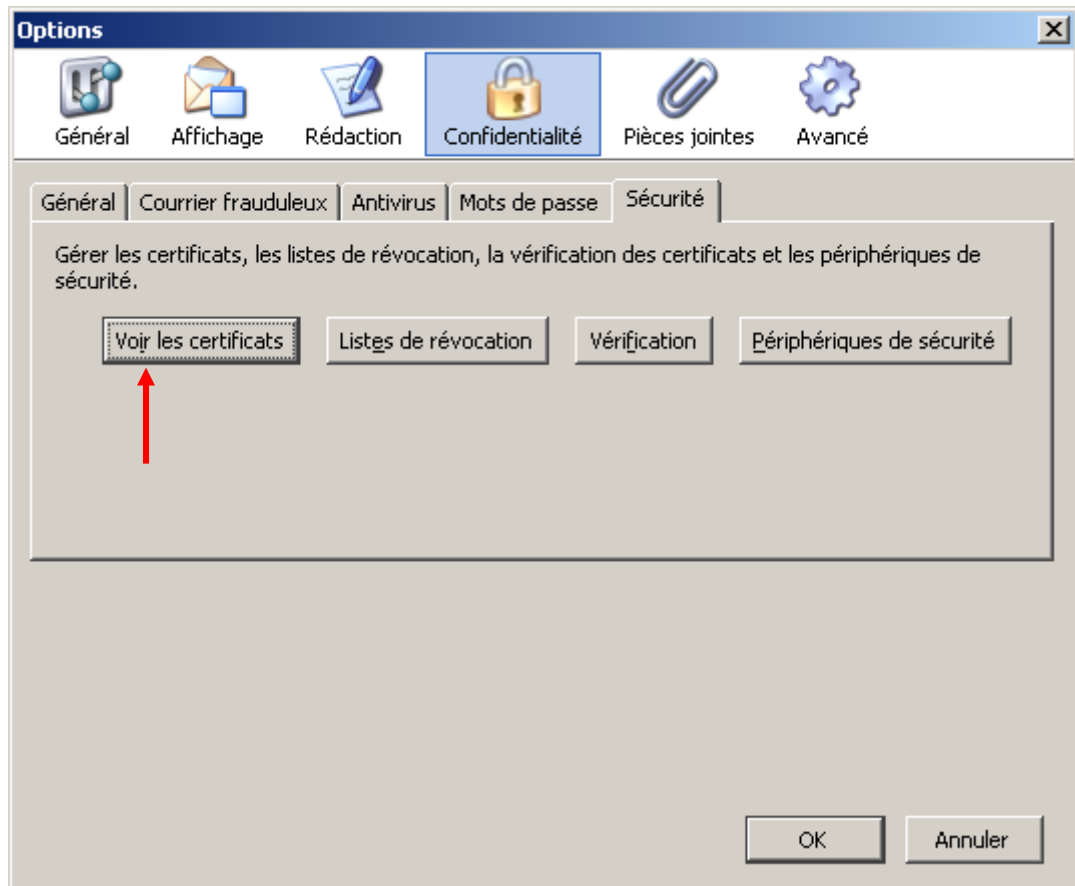


The image on the right shows that the private key is indeed present.

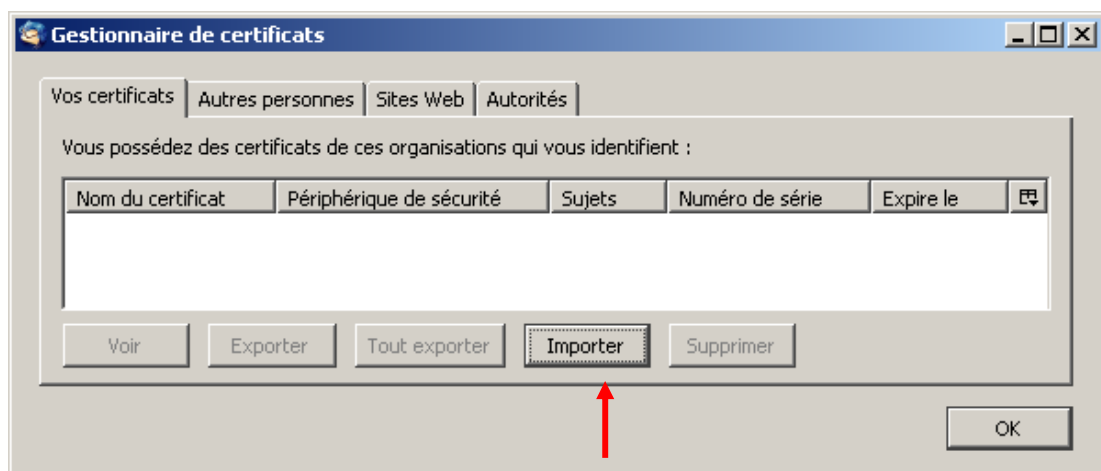
11.5 Importing a certificate into Mozilla Thunderbird

With Mozilla Thunderbird, import of a complete PKCS#12 file with the root certificate.

Open the "Tools > Options..." menu, the "Confidentiality" section and then the "Security" tab:



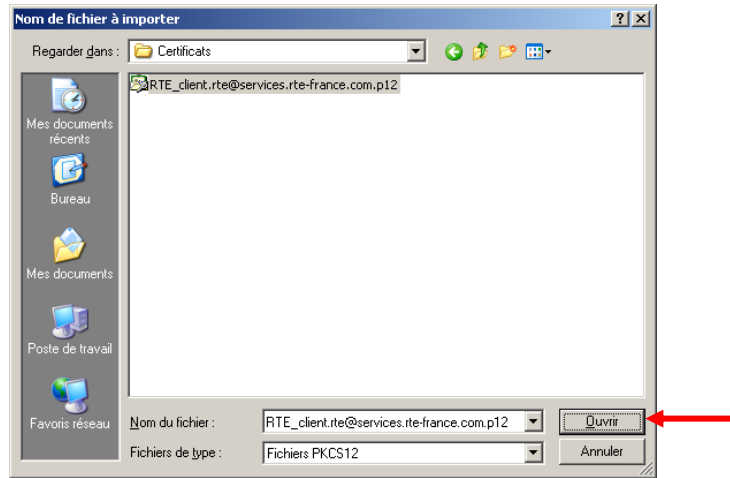
Click on the "View the certificates" button.



Click on the "Import" button:

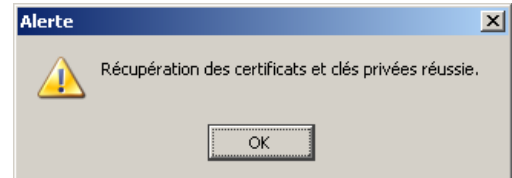
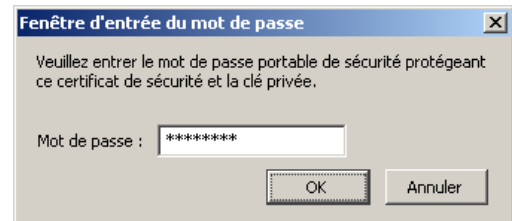
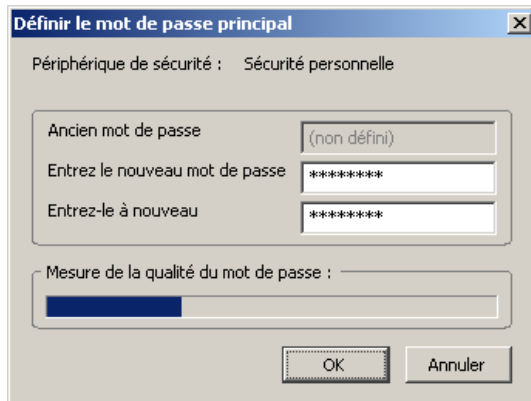
Select the PKCS#12 file (with a ".p12" or ".pfx" extension):

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Setting up the protection password for the certificate store.

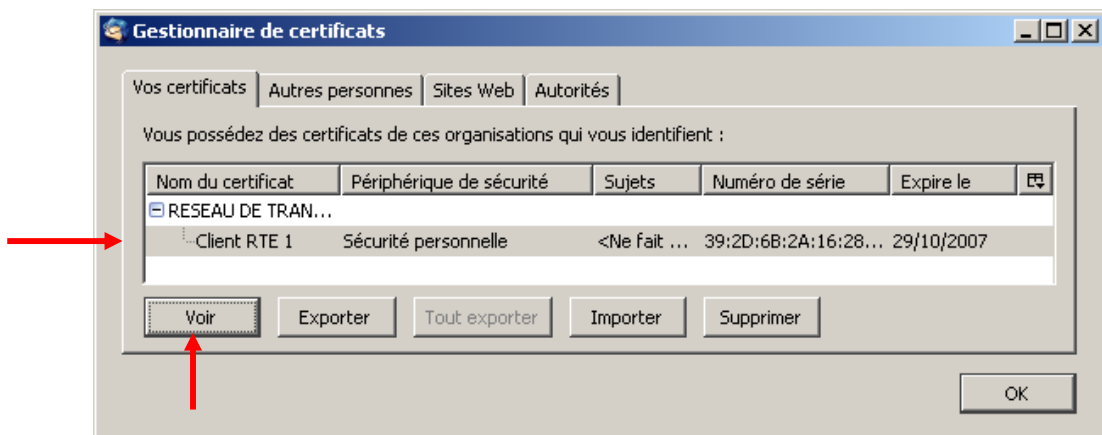
Enter the password restricting access to the PKCS#12 (.p12) file, then click on "OK".



Click on "OK".

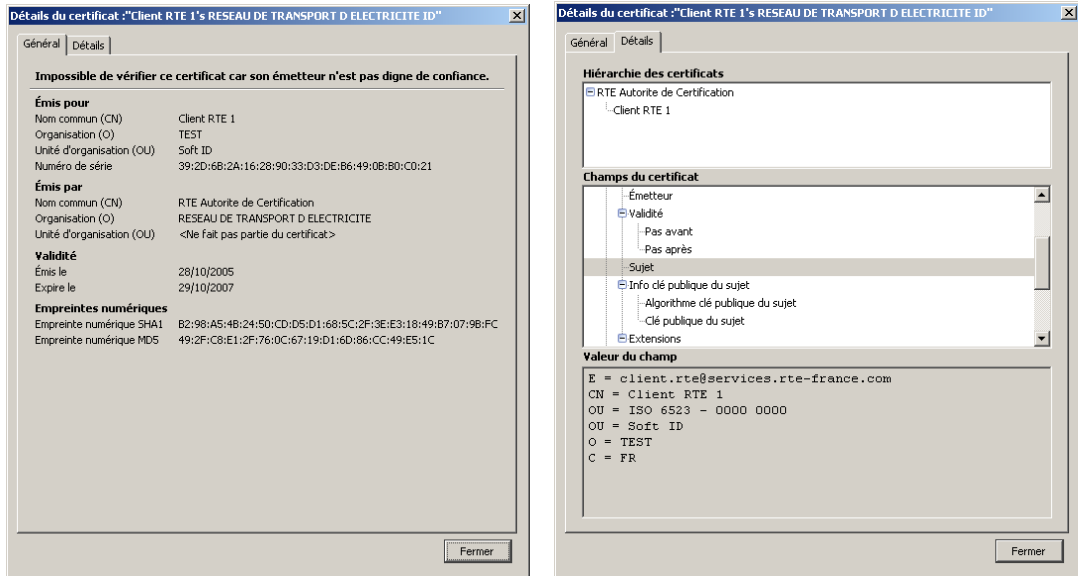
Note: if this password already exists, a field entry form will appear.

The holder's certificate is now in the Mozilla Thunderbird certificate store:

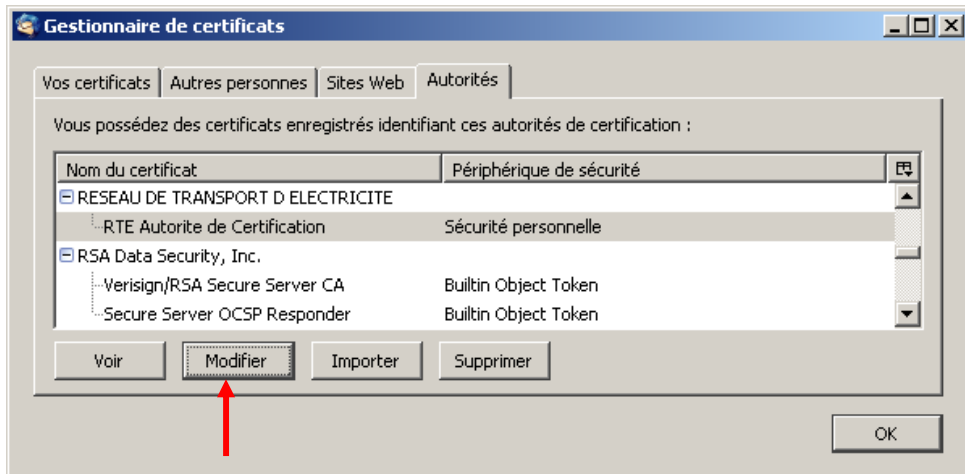


Check that it's the right one by clicking on the "View" button.

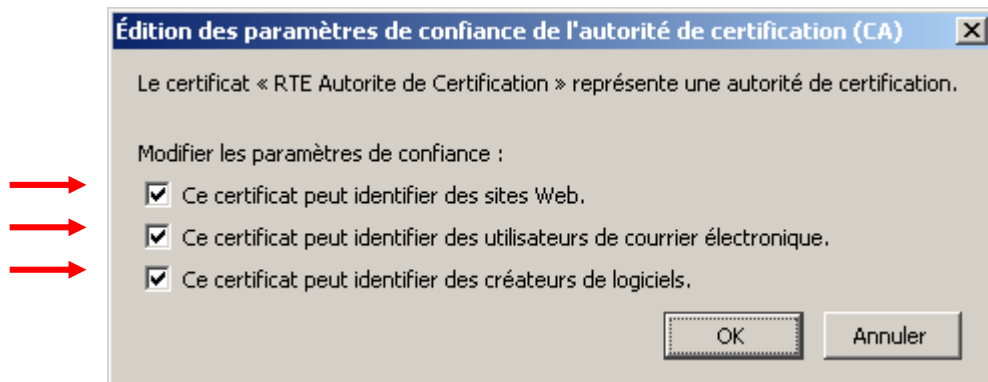
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The RTE CA certificate is also in the Mozilla Thunderbird store:

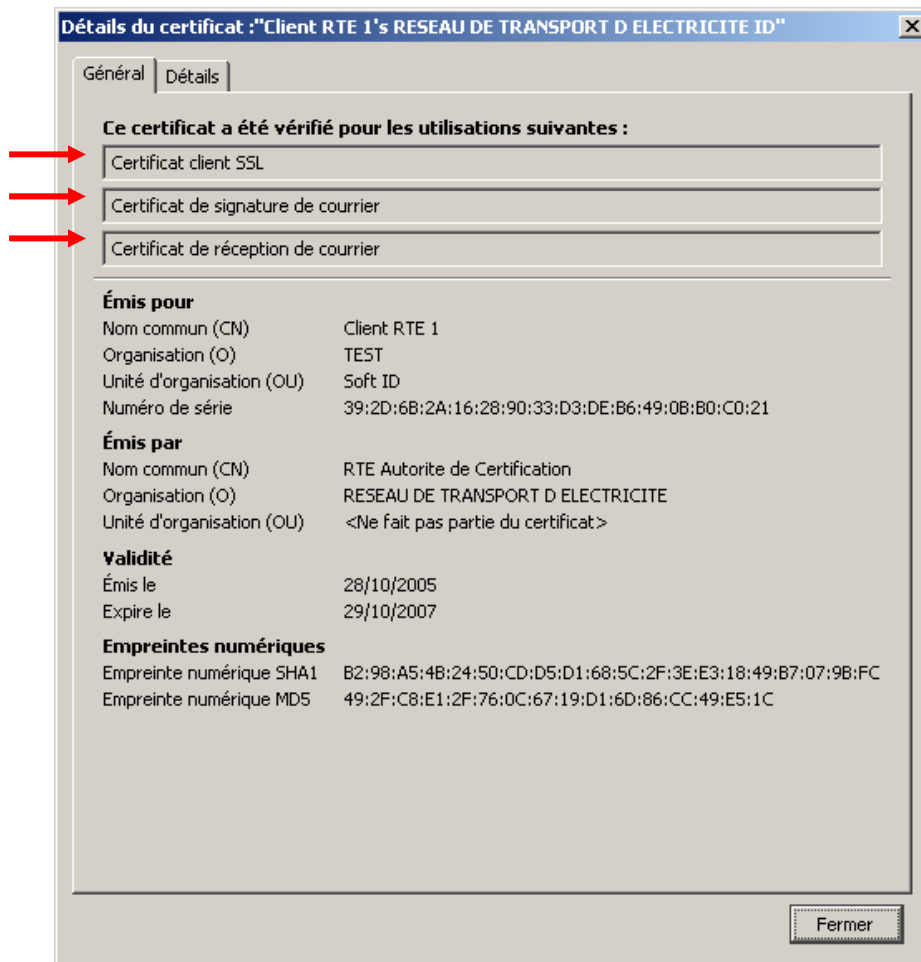
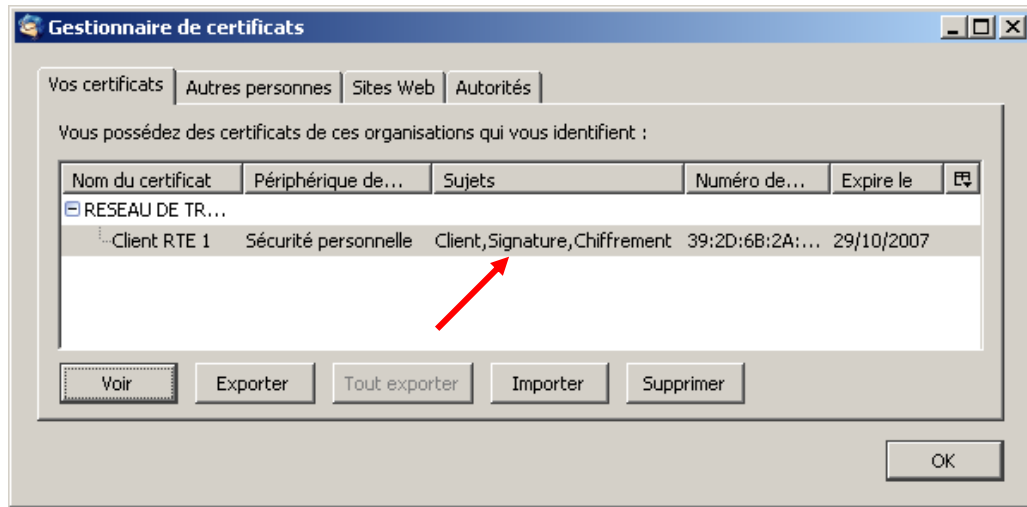


Click on the "Modify" button.



Check the three boxes shown above, then click on "OK".

You have now declared your trust in the RTE root certificate as shown below:



12. Appendix B – (PKI) secured environment

This appendix describes the secured environment in which the PKI system is implemented. It specifically addresses:

- the concepts of the secured environment and the corresponding computing objects managed by the PKI,
- the role of the different entities taking part in the PKI operational processes.

12.1 Concepts and objects generated by a PKI

This appendix presents the principal concepts needed to understand the role of the objects generated by a PKI:

- a presentation of the structural principles of a secured process,
- the role of the key pair,
- and the certificates.

12.1.1 What is a secured process?

12.1.1.1 Definition of a PKI

With a PKI (Public Key Infrastructure, or IGC in French for Infrastructure de Gestion de Clés), every certificate holder has a pair of keys – a private key, known only to its sole owner, and a public key – inter-connected with a complex mathematical relationship, which makes it almost impossible to determine the private key with only the public key. This means that the probability of determining the private key based on the public key in a **reasonable** period of time is **very low**.

Data encrypted with one key (typically the public key) can only be decrypted using the other one (typically the private key). This is the basis which forms the core operation that ensures the confidentiality of the exchanged messages.

12.1.1.2 The four pillars of information communication security

This electronic identity card is designed to establish a trust environment based on the four following fundamental pillars:

- **authentication** confirms that the participant parties are indeed who they claim to be;
- **confidentiality** prevents non-recipients from reading the data;
- **integrity** ensures that the data have not been altered in transit;
- **non-repudiation** makes it impossible for either party to deny that the information has been transmitted.

12.1.1.3 The cryptographic solution

Because of the inherent nature of the technology used (i.e. public protocols, architectures, etc.), information circulating on the Internet is not

confidential. Neither do the technologies currently employed respond to the other three security requirements mentioned above.

In order to maintain the confidentiality of communications made over the Internet, the data must be rendered incomprehensible to anyone except the intended recipients. Encryption is a solution that meets these demands.

The encryption of the data is naturally accompanied by the authentication of the system users. In reality, if certain data are confidential, it is necessary that the senders and receivers of that data can authenticate each other in a certain and unambiguous manner in order to proceed with secured communications.

Authentication relies on the possession of a certificate. This certificate is delivered by a Certification Authority to which the participating parties of a transaction both assign confidence (in our case, the Certification Authority is the RTE). In addition, certificate holders can trust the information supplied to them, and RTE knows that only the assigned certificate holders have access to the information.

NOTE

Following an analogy in normal life, it is necessary to supply an identity document provided by an approved authority in order to have access to certain privileges reserved for citizens of a country (e.g. very expensive purchases, exercising voting rights, etc.).

12.1.2 The role of the key pair

Each certificate holder has a public key as well as a corresponding private key:

- The **private key** is the key that the certificate holder must keep confidential. He is the only person to **have that key and be able to use it**. He may not necessarily know it himself (for example, it might be stored on a card with a computer chip, from which it can be extracted, but access to the card is protected with a PIN code known only by its owner).
- The **public key**, as its name indicates, is public and may be communicated to everyone. The public keys of certificate holders are only used to encrypt messages intended for the certificate's holder. If an encrypted message is intercepted, there are no significant impacts to confidentiality because the message can not be decrypted (in a reasonable period of time) by a person who does not have the private key.

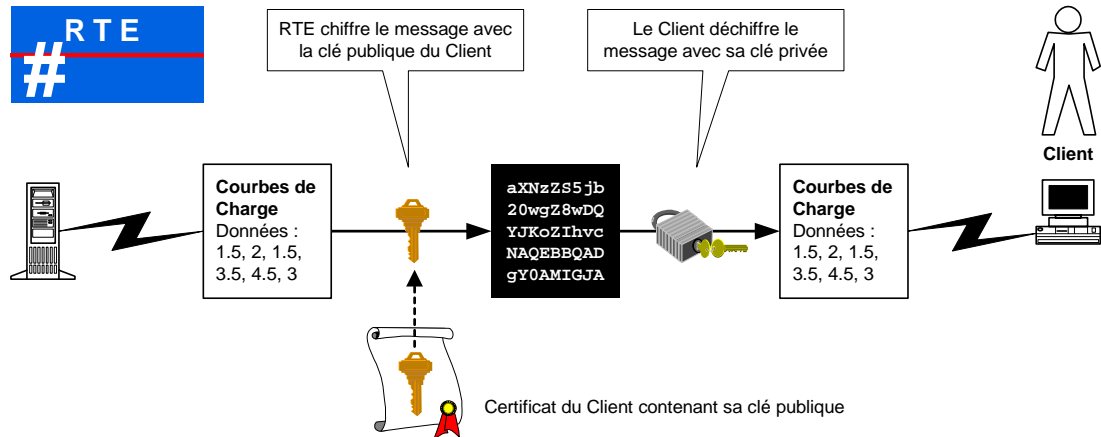
The private key enables its owner to sign messages that he sends out and to decrypt messages that are sent to him.

12.1.2.1 Encryption and decryption of a message

Each message is encrypted with the public key of its recipient, who will decrypt that message with his private key.

When RTE sends a message to its customer A:

1. RTE knows the public key of customer A (from his certificate).
2. RTE automatically encrypts the message using customer A's public key and sends it to him using RTE's electronic email services.
3. Customer A receives the message and automatically decrypts it with his private key.

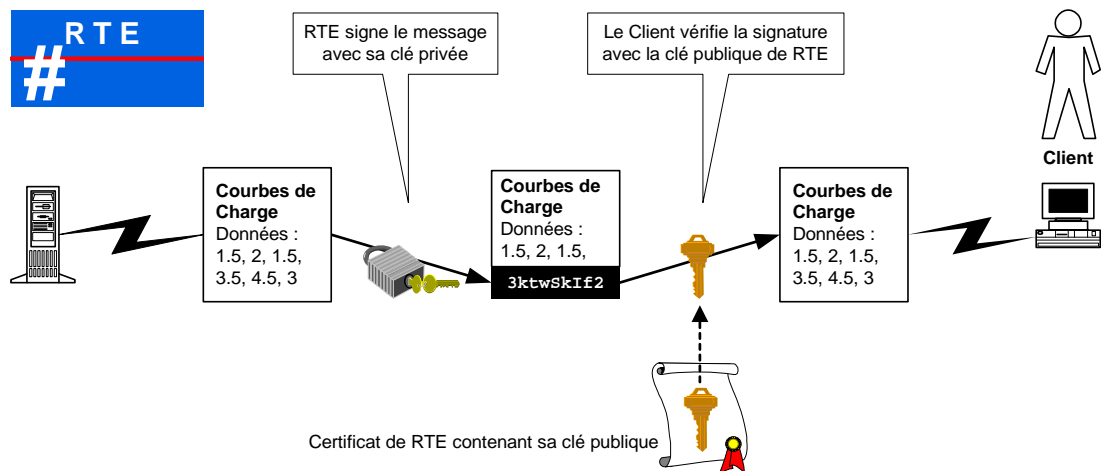


Encryption and decryption with a key pair

12.1.2.2 Use of the keys for signing messages

Each message is signed with the private key of the sender. The source (i.e. the signature) of a message can be checked thanks to the sender's public key being openly available through his certificate.

To prove to customer A that the message he has received actually does come from RTE, RTE automatically signs its messages with its own private key before sending them to customer A.



Signing and signature verification with a key pair

When customer A receives the message from RTE, he automatically verifies the signature on the received message with RTE's public key.

12.1.3 The certificates

12.1.3.1 Objectives of the digital certificate

Because the public keys are used to verify the electronic signatures and to encrypt messages, it is critical for every certificate holder to be certain about the identity of the owner of a public key: this is the role of the **certificate**.

12.1.3.2 Properties of a certificate

The certificate is an electronic proof of identity:

- which guarantees the identity of its holder,
- which contains data facilitating identification,
- which is resistant to counterfeits and is issued by a trusted third party: the Certification Authority.

A Certification Authority is an entity which creates and manages certificates. It defines the rules for registration in the PKI of the various certificate holders.

12.1.3.3 Structure of a certificate

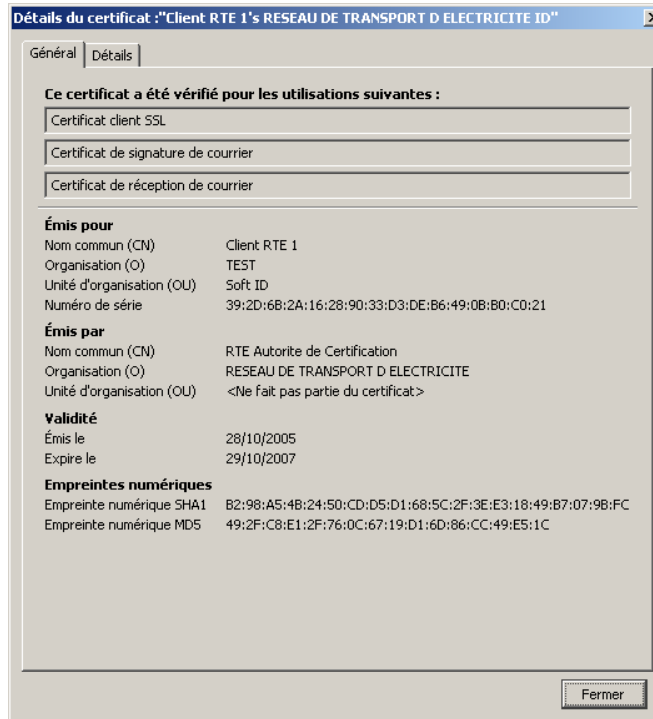
A digital certificate contains:

- the **public key** of the owner,
- the **name of the owner** and other identification information (the email address of the person if it is a certificate to be used to sign emails),
- the **validity period** of the certificate,
- the **name of the certification authority** which generated this certificate,
- a unique **serial number**,
- and the **signature** of the certification authority.

12.1.3.4 Certificate examples



A digital certificate in Internet Explorer



A digital certificate in Mozilla Firefox



12.2 Documentation

Reference documents:

- The RTE Certification Policy,
- The subscription contract for the RTE's secured IT system.

Web sites:

- <http://www.legifrance.gouv.fr/>
- Legislation from March 13th 2000 bearing modifications on legal proofs of information technologies relative to electronic signatures:
<http://www.assemblee-nat.fr/>
- Directive 1999/93/CE from December 13th 1999 concerning an EU community framework for electronic signatures:
<http://europa.eu.int/>
- The regulatory working group on electronic signatures:
<http://www.internet.gouv.fr/>
- Keynectis:
<http://www.keynectis.com/>

13. Appendix C – Glossary

When certificate holders approach their new secure environment, they will be confronted with specific terminology, the terms of which are explained in this section.

- **Authentication**

Verification of the validity of identity as declared by a user, by a device or by another entity in an information or communications system.

- **Certification Authority**

A Certification Authority (CA) is an entity which issues digital certificates for use by other parties as electronic equivalents of identity documents. In distributing digital certificates, the Certification Authority or Trust Authority serves as an ethical guarantor by asserting a person's identity through the certificate provided to that person. According to the scope accorded to the Certification Authority, this certificate will have a field of application of varying range: limited to internal communications in a company (like a company security badge) or for use in communications with other organisations and administrative bodies (like a national identity card or passport).

- **Certificate**

A digital certificate plays the role of an electronic ID card (electronic passport). It guarantees the identity of its owner in electronic transactions and contains all the information required to permit such identification (surname, first name, possibly company, address, etc.). A digital certificate consists of a public key and personal information about the holder, all signed by a Certification Authority.

- **Confidentiality**

A property of data or information which are neither actively nor passively available nor disclosed to unauthorised persons.

- **Cryptography**

The practice, study and techniques of transforming data with the aim of hiding its semantic content, establishing its authenticity, preventing its unobserved modification, warning of its repudiation, and preventing its unauthorised use.

- **Private Key**

A secret digital value assigned to one person, allowing that person to either successfully decipher messages encrypted with the corresponding public key or to affix an authenticating signature to the foot of messages sent.

- **Public key**

A digital value, assigned to one person, but distributed to others so that these others are able to either securely send the person encrypted data or to verify that person's signature.

- **Encryption / Decryption**

The transformation of data through cryptographic techniques to make that data unintelligible in order to ensure its confidentiality / The inverse transformation of encrypted data.

- **Integrity**

The assurance that the data or information have not been modified or altered in an unauthorised manner.

- **Non-repudiation**

A property obtained with cryptographic methods to prevent a person from denying having performed a particular action on the data (for example, source non-repudiation; attestation of obligations, intentions or commitments; establishment of ownership).

- **Revocation**

Revocation is the procedure which leads to the deletion of the guarantee provided by the Certification Authority for a given certificate, made upon the request of the subscriber or any other suitably authorised person. The request may be the consequence of various types of events, such as the compromise or destruction of the private key, the modification of information contained in the certificate, or non-respect of the certificate's usage rules.

- **Electronic signature**

The electronic signature of a document consists of signing a digital "summary" of that document with one's private key, which can then not be modified without such modification being visible. As with a handwritten signature, it commits the signatory to certain responsibilities.

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