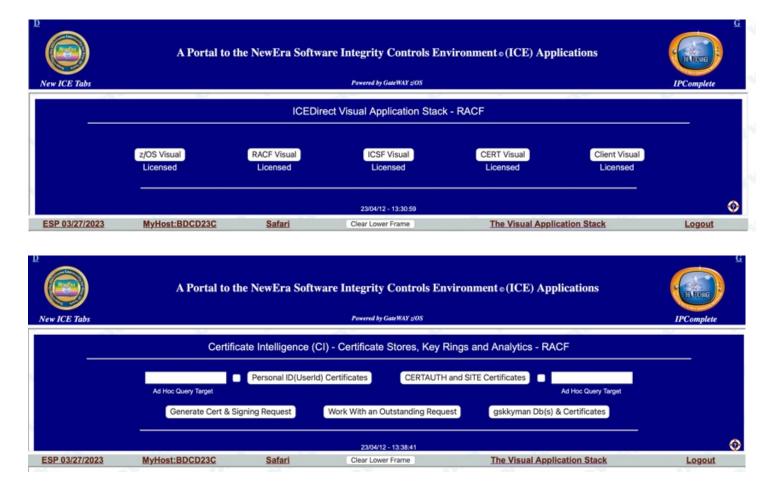# Certificate Intelligence - A Modern and Efficient Way to Manage Mainframe Certificates

Certificate Intelligence provides the capability that is needed to manage all aspects of digital certificates for the mainframe environment and applications. A modern, secure web interface will simplify the processes needed to ensure the integrity of your certificates. Assist in the creation and installation of Certificates and Rings, validating each step toward certification and activation.

Researching and validating the handshake that you expect between a z/OS system and any remote Server is complex. When the connection fails it can be, to say the least, frustrating. The details of possible missteps start long before any attempt is made. Network actors such as Server Domains and Configurations merge with the Client Key Rings, Certificates, ICSF, ESM Profiles/Permits, Ciphers and Protocols together with each playing a part in establishing a successful connection.

Certificate Intelligence is one of the applications within the Visual stack of ICEDirect. Other applications that are available to provide support for certificates and overall security, are RACF Visual, and ICSF Visual for inspections and configuration support for RACF and ICSF. The Client Visual is a testing and certification tool that can monitor and test certificate handshake connections between the z/OS LPARs and any remote connections.

The Certificate Intelligence capability begins with an inspection of the Digital Certificates stores in the ESM, ICSF or the gskkyman databases. With this inspection completed it is easy to identify any existing or approaching problems with your personal or site certificates. From the same panel where the result of the inspection is displayed, actions can be requested with a simple click of the mouse to take action and have the necessary commands generated and submitted.

From this Certificate Inspection results display it is possible to perform tasks such as Re-Keying, Deleting, Installing, Connecting, Altering, Generating, or Submitting a signing request to a signing authority. There is also a link to the RACF SETROPTS classes display so that any actions that needs to be done within RACF can also be performed with the same point and click capability.

IBM Resource Access Control Facility (RACF) - Release:7791

RACF Special: Yes		RACF Auditor: Yes
RACF Operations: Yes	Last IPL:Sunday 03.19.2023 5:3:28	RACF ROAuditor: ---
	This is the Running System	

SmfID: BDCD	System: BDCD23C	Sysplex: ADCDPL	z/OSVer: V2R3
IPLUnit: 0A83	Dataset: SYS1.IPLPARM	IODFUnit: 0A83	Dataset: SYS1.IODF99
LoadSfx: X1 Nucleus: 1	HWName: -n/a-	LPAR: -n/a-	VM: ZOS23B

SYS1.RACFDS	None Found	None Found
Db Name	Db Profile	Db UACC
	23/04/12 - 14:16:37	

CERTAUTH and SITE Owned Source
Certificate Inspection

Active SETROPTS Classes	Generate a Signing Request	Outstanding Signing Request

CERTAUTH Certs - 44	Expired Certificates - 22	Private Key in ICSF - 0	SITE Certificates - 0

Inspection of Key Rings and Their Certificate Content

Expired Certificate in Owner Ring

Row	Owner 01	Owner 02	Owner 03	Owner 04	Owner 05	Owner 06	Owner 07	Owner 08	Owner 09	Owner 10
01	01 IBMUSER	01 IZUSVR	03 START1	01 TCPIP	01 WOEMADM	01 WSADMSH	03 WSCRU1	01 WSSRU1	01 XEACRU	01 XFACRU
02	01 XSACRU	01 ZOSCSRV								

Inspection of Certificate and Their Attributes

Indicates Inadequate Algorithm

Row	Sign 01	Sign 02	Sign 03	Sign 04	Sign 05	Sign 06	Sign 07	Sign 08	Sign 09	Sign 10
01	05 md2RSA	09 md5RSA	21 sha1RSA	08 sha256RSA	01 sha384ECDSA					

Indicates Key Type is Inadequate

Row	Type 01	Type 02	Type 03	Type 04	Type 05	Type 06	Type 07	Type 08	Type 09	Type 10
01	01 NIST	43 RSA								

Indicates Inappropriate Key Size

Row	Size 01	Size 02	Size 03	Size 04	Size 05	Size 06	Size 07	Size 08	Size 09	Size 10
01	01 1000	23 1024	19 2048	01 384						

Indicates NoTrust Certificate

NoTrust	Trust	HighTrust
35	9	0

Indicates No Private Key/ICSF

No Key	Has Key	In ICSF
36	8	0

Indicates No Ring Association

No Rings	One Ring	> 1 Ring	> 5 Rings	> 10 Rings
27	6	1	10	0

Indicates No Certificate Usage Defined

Certsign	Encrypt	Docsign	Handshake	Keyagree	None
22	2	2	3	0	21

Show the Personal Inspection	Show the Key Ring Inspection	CERTAUTH and SITE Listing
☐ [ ] Certificate Target	☐ *AUDIT Key Ring Target	☐ [ ] Certificate Target

From this Certificate Inspection results display, you can see the full inventory of your certificates. Any existing or potential problems are easily identified and full detail for any certificate can be displayed with simple click of a mouse. The Ring to which a certificate maybe linked with, and the ownership of the Ring and the Certificate is also available. The creation of a Ring and Certificate can be accomplished from this panel with all commands being generated and submitted by a request with a simple click. All action taken by the user is logged for audit and forensic information.

			Inspection of Certificate by Label Name - Sorted Desending							

Owned by CERTAUTH	Owned by the SITE	Indicates TRUST	Indicates NOTRUST	Indicates HIGHTRUST

Expires in Less than 30 days	Certificate has Expired	Expires in Less than 60 Days	Not an Acceptable GASP

Row	Status	Own	CERTAUTH and SITE Owned Certificates	Pvk	KeyUse				End Date	
001	TRUST	C	Z23CDomainCA	Yes	CertSign		∞	8	2050/12/31	
002	TRUST	C	SSLDomainCA	Yes	CertSign		∞	8	2050/12/31	
003	TRUST	C	Dal22DomainCA	Yes	CertSign		∞	8	2050/12/31	
004	TRUST	C	LibertyCA.zOSConnect	Yes	CertSign		∞	8	2050/12/31	
005	TRUST	C	AdcdShrCA	Yes	CertSign		∞	8	2050/01/01	
006	NOTRUST	C	Verisign Class 3 Primary CA - G4	No	CertSign			8	2038/01/18	
007	NOTRUST	C	Verisign Universal Root CA	No	CertSign			8	2037/12/01	
008	NOTRUST	C	Verisign Class 3 Primary CA - G5	No	CertSign			8	2036/07/16	
009	NOTRUST	C	Verisign Class 4 Primary CA - G3	No	NotKnown			8	2036/07/16	
010	NOTRUST	C	Verisign Class 3 Primary CA - G3	No	NotKnown			8	2036/07/16	
011	NOTRUST	C	Verisign Class 2 Primary CA - G3	No	NotKnown			8	2036/07/16	
012	NOTRUST	C	Verisign Class 1 Primary CA - G3	No	NotKnown			8	2036/07/16	
013	NOTRUST	C	STG Code Signing CA - G2	No	CertSign			8	2033/05/31	
014	TRUST	C	DIGICERT	No	CertSign			8	2031/11/09	
015	NOTRUST	C	Verisign Class 4 Primary CA - G2	No	NotKnown			8	2028/08/01	
016	NOTRUST	C	Verisign Class 3 Primary CA - G2	No	NotKnown			8	2028/08/01	
017	NOTRUST	C	Verisign Class 2 Primary CA - G2	No	NotKnown			8	2028/08/01	
018	NOTRUST	C	Verisign Class 1 Primary CA - G2	No	NotKnown			8	2028/08/01	
019	NOTRUST	C	Verisign Class 2 Primary CA	No	NotKnown			8	2028/08/01	
020	NOTRUST	C	Verisign Class 3 Primary CA	No	NotKnown		∞	8	2028/08/01	
021	NOTRUST	C	STG Code Signing CA	No	CertSign			8	2028/06/30	
022	TRUST	C	JES2CA_EDS	Yes	CertSign		∞	8	2027/05/31	
023	NOTRUST	C	GeoTrust Global CA	No	NotKnown			8	2022/05/20	🗑
024	TRUST	C	zOSMFCA	Yes	CertSign		∞	8	2021/08/20	🗑
025	NOTRUST	C	ICP-Brasil CA v1	No	CertSign			8	2021/07/29	🗑
026	NOTRUST	C	Thawte Personal Premium CA	No	NotKnown		∞	8	2020/12/31	🗑
027	NOTRUST	C	Thawte Personal Freemail CA	No	NotKnown		∞	8	2020/12/31	🗑
028	NOTRUST	C	Thawte Personal Basic CA	No	NotKnown		∞	8	2020/12/31	🗑
029	NOTRUST	C	Thawte Premium Server CA	No	NotKnown		∞	8	2020/12/31	🗑
030	NOTRUST	C	Thawte Server CA	No	NotKnown		∞	8	2020/12/31	🗑
031	NOTRUST	C	Verisign Class 1 Primary CA	No	NotKnown		∞	8	2020/01/07	🗑
032	NOTRUST	C	Entrust Secure Server Root CA	No	CertSign			8	2019/05/25	🗑
033	TRUST	C	WebSphereCA	Yes	CertSign		∞	8	2018/12/31	🗑

There is more information and examples of ICEDirect and Certificate Intelligence available in the recorded presentations listed below. Please review them to get a more complete understanding of how these applications can be a benefit to you and your organization. You can also contact NewEra Software for a more detailed discussion in a webcast and DEMO session for you and your staff.

https://www.newera.com/INFO/CI_Intro1.mp4
https://www.newera.com/INFO/CI_Intro2.mp4