



Things **i** Love about



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What did he say?



- ▶ As you may have noticed I am British
- ▶ I apologize for anything that is lost in translation
- ▶ If it does not make sense, then ask

What does he know?



- ▶ Member of CEAC – Common Europe Advisory Council
- ▶ IBM 7.6 Early Ship – Beta Tester
- ▶ IBM 7.6 Redbook Author
- ▶ Performed > 100 IBM i 7.6 installs & upgrades before GA
- ▶ I have spent a lot of time with IBM i 7.6

— EPISODE 7.6 —

RETURN OF THE JED-i

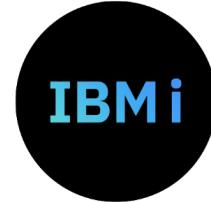
Not so long ago, in a galaxy
Rochester way

The mighty JED-i coders from the legendary Rochester Quadrant continue their 37-year battle against the dark side of the force.

*Bringing the light of MFA to IBM i users throughout the galaxy. Not content with this, the mighty JED-i gave us *SYSBAS encryption and post quantum cryptography, delivering the most POWER-ful operating system the universe had ever seen!*

Now the time comes for all who believe in the JED-i way of life, to grasp the goodness of IBM i 7.6 and use it to thwart all that would do evil to it and its users.

Things Love about 7.6



1. ??? #NoSpoliers	11. Disable User Impersonation
2. ASP 1 Encryption	12. Correct total disk space shown by NetServer
3. Change Aggregated Ethernet whilst active	13. NetServer Unknown User in Audit Journal
4. Improvements to WRKPTFGRP	14. Multi Factor Authentication
5. QIBM_QSY_AUTH MFA integration	15. Migrate Whilst Active
6. TLS Configuration	16. Project Bob
7. Configure Host Server	17. New User Profiles that you cannot change
8. QIBM_IOSYSCFG_VIEW Function	18. ACS RSS format numeric based on locale
9. Nav4i Makeover	19. Authority Collection Service for IFS
10. Secure Passwords by Default	20. Delete Old Journal Receivers

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Delete Old Journal Receivers

Delete Old Journal Receivers

Example

- List all the detached journal receivers in APPLIB and TESTLIB that are older than 30 days.

```
CALL SYSTOOLS.DELETE_OLD_JOURNAL_RECEIVERS(DELETE_OLDER_THAN => CURRENT DATE - 30 DAYS,  
JOURNAL_RECEIVER_LIBRARY => 'APPLIB, TESTLIB',  
PREVIEW => 'YES');
```

- Delete all the detached journal receivers in APPLIB and TESTLIB that are older than 30 days.

```
CALL SYSTOOLS.DELETE_OLD_JOURNAL_RECEIVERS(DELETE_OLDER_THAN => CURRENT DATE - 30 DAYS,  
JOURNAL_RECEIVER_LIBRARY => 'APPLIB, TESTLIB',  
PREVIEW => 'NO');
```

- Delete all detached journal receivers in all libraries starting with MY that are older than one year.

```
CALL SYSTOOLS.DELETE_OLD_JOURNAL_RECEIVERS(DELETE_OLDER_THAN => CURRENT DATE - 1 YEAR,  
JOURNAL_RECEIVER_LIBRARY => 'MY%',  
PREVIEW => 'NO');
```

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New Authority Collection Service for IFS

New Authority Collection Service for IFS

Problem: IBM i Authorities do not translate well into the Open-Source World.
(*OBJALTER, *OBJEXIST, *OBJMGT, *OBJOPR, *OBJREF, *ADD, *DLT, *READ, *UPD, *EXECUTE)

Solution: New IBM i View called AUTHORITY_COLLECTION_IFS

Give you IFS permission information, in a way your Open-Source Developers will understand (RWX).

1. STRAUTCOL TYPE(*OBJAUTCOL)
2. CHGAUTCOL OBJ('/MyApp') AUTCOLVAL(*OBJINF) SUBTREE(*ALL) SYMLNK(*YES)
3. Use your application
4. ENDAUTCOL
5. SELECT * FROM QSYS2.AUTHORITY_COLLECTION_IFS;

Check Timestamp	Path Name	System Object Type	Detailed Required Authority	Detailed Current Authority	Authority Source	Job Name	Job User	Job Number
2025-05-16 18:58:51.806165	/home/rowton	*DIR	*R *W *X	*R *W *X	USER *ALLOBJ	QPADEV0001	ROWTON	630639
2025-05-16 18:58:56.597752	/home/rowton/RIT MARK76.txt	*STMF	*R	*R *W *X	USER *ALLOBJ	QPADEV0001	ROWTON	630639

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ACS RSS format numeric based on locale

ACS RSS format numeric based on locale

Run SQL Scripts - RITMON(S0606fcr)

File Edit Search View Connection Run Explain Monitor Editor Tools

List of Savf Files By Size.sql X

```
select Diobli, Diobnm, Diobat, Diobsz
from qussys.qaezdisk
where Diobat = 'SAVF' AND Diobow Not Like 'Q%'
order by Diobsz DESC
limit 200;|
```

Object Library	Object	Object Attribute	Object Size
DIOBLI	DIOBNM	DIOBAT	DIOBSZ
QGPL	NVSTLIB	SAVF	871227392
QGPL	NVPOLIB	SAVF	325251072
QGPL	NVSUBS	SAVF	294961152
TFRLIB	F_MTDIFS	SAVF	266674176
QGPL	NVWHLIB	SAVF	262189056
ICEPKGTM	ICEPKG	SAVF	254472192
QGPL	NVSCLIB	SAVF	178016256

ACS RSS format numeric based on locale

Preferences

General Results Content Assist SQL Formatter Visual Explain

Display

Column headings: Label and Name

Number of rows to retrieve at a time: 100

Text to display when value is null: <NULL>

Cell background color when value is null

Format numeric values based on the conventions of the current locale (en_GB)

Options

Open new results in a separate window

Prompt to close results prior to disconnecting

Automatically close cursor to release locks and resources after specified period of inactivity

Minutes: 10 (1 to 600)

ACS RSS format numeric based on locale

```
select Diobli, Diobnm, Diobat, Diobsz
from qusrsys.qaezdisk
where Diobat = 'SAVF' AND Diobow Not Like 'Q%'
order by Diobsz DESC
limit 200;
```

Object Library	Object	Object Attribute	Object Size
DIOLIBI	DIOLIBNM	DIOLIBAT	DIOLIBSZ
QGPL	NVSTLIB	SAVF	871,227,392
QGPL	NVPOLIB	SAVF	325,251,072
QGPL	NVSUBS	SAVF	294,961,152
TFRLIB	F_MTDIFS	SAVF	266,674,176
QGPL	NVWHLIB	SAVF	262,189,056
ICEPKGTM	ICEPKG	SAVF	254,472,192
QGPL	NVSCLIB	SAVF	178,016,256
QGPL	NVSLLIB	SAVF	174,219,264
RITMONDEV	QMGT00720	SAVF	101,863,424

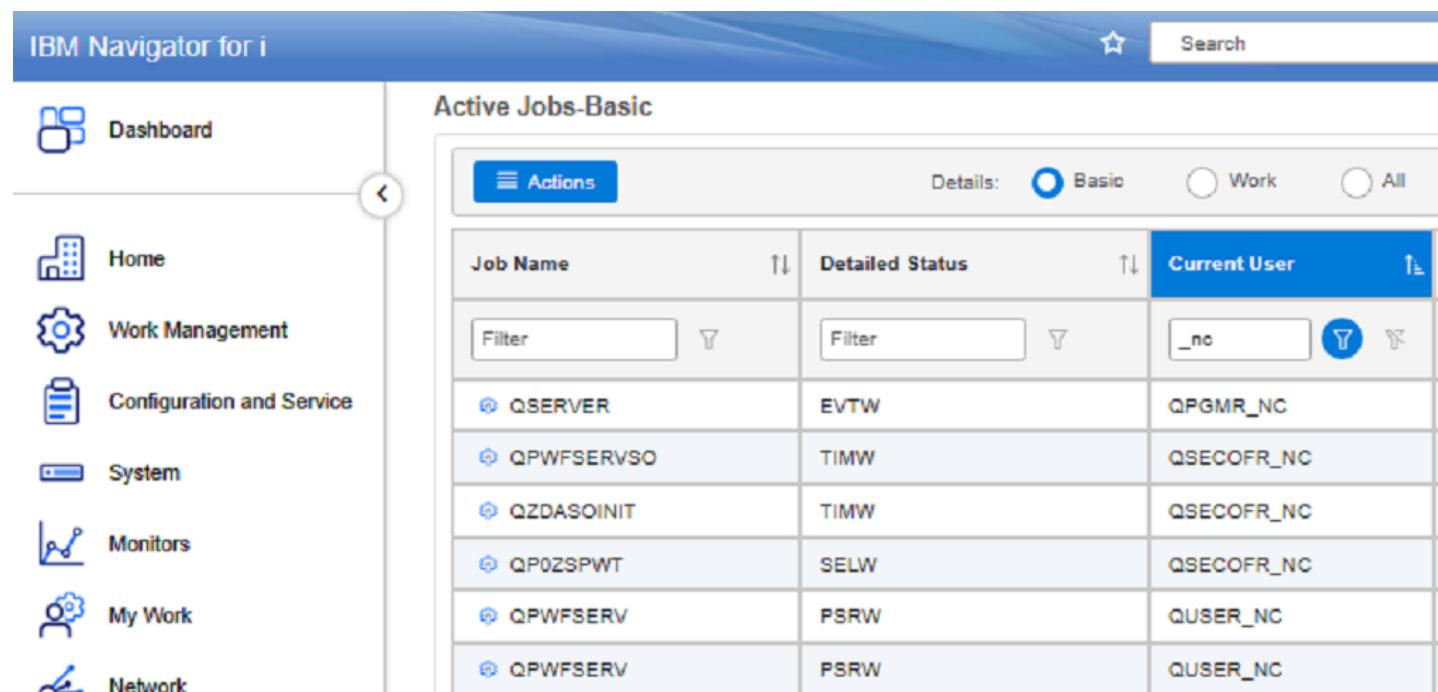
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New user profiles that you can't change

New user profiles that you can't change

New “Not Changeable” User profiles shipped in 7.6

- QPGMR_NC, QSECOFR_NC, QSYSOPR_NC, and QUSER_NC
- Can NEVER have a password
- CANNOT be added as restricted to the function usage
- Designed for operating system functions to run under
- Protection against evaluation of authority attacks



The screenshot shows the IBM Navigator for i interface. The left sidebar contains navigation links: Dashboard, Home, Work Management (which is highlighted in blue), Configuration and Service, System, Monitors, My Work, and Network. The main panel is titled "Active Jobs-Basic" and displays a table of running jobs. The table has columns for Job Name, Detailed Status, and Current User. The "Current User" column is highlighted in blue. The data in the table is as follows:

Job Name	Detailed Status	Current User
QSERVER	EVTW	QPGMR_NC
QPWFSERVSO	TIMW	QSECOFR_NC
QZDASOINIT	TIMW	QSECOFR_NC
QP0ZSPWT	SELW	QSECOFR_NC
QPWFSERV	PSRW	QUSER_NC
QPWFSERV	PSRW	QUSER_NC

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Project Bob

Project Bob

Watson Code Assistance for i is dead

Long live King Bob!



Project Bob

Why am I happy that WCA4i is dead?

Phase 1 Explain Code – delivered

Phase 2 Validate Code – in plan

Phase 3 Suggest Code – in plan

Phase 4 Refactor Code – in plan

Bob Starts at Phase and adds

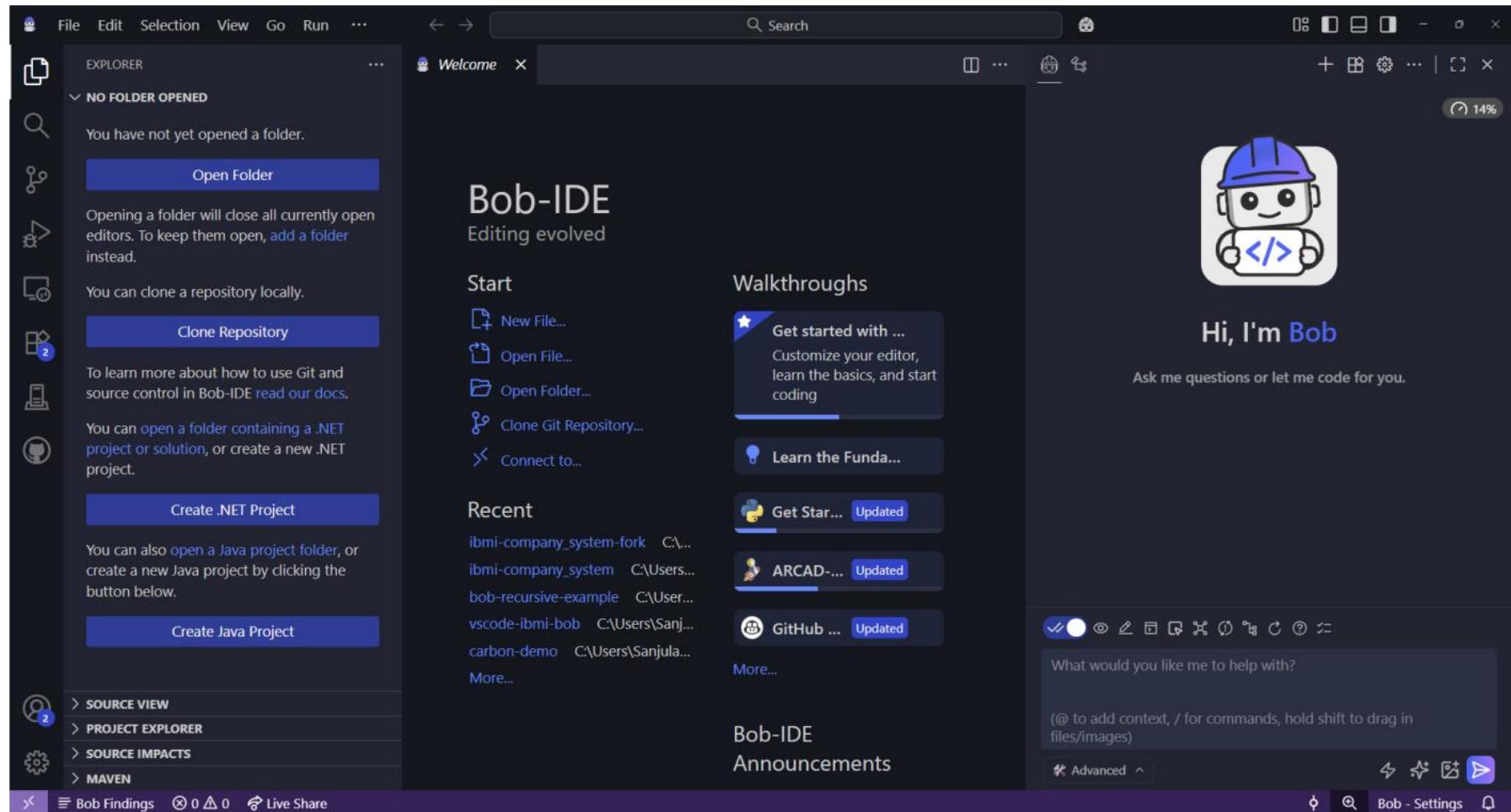
Documentation, diagrams

New Code création,

New application creation

Bob is NOT JUST an RPG assistant

Project Bob



The screenshot shows the Bob-IDE interface. The left sidebar has sections for 'EXPLORER', 'NO FOLDER OPENED' (with 'Open Folder' button), 'Git' (with 'Clone Repository' button), 'Source Control' (with 'Create .NET Project' button), and 'Java' (with 'Create Java Project' button). The main area features a 'Bob-IDE' logo and the tagline 'Editing evolved'. It has 'Start' and 'Walkthroughs' sections, with 'Get started with ...' being the primary call-to-action. The 'Recent' section lists several projects. The bottom right has a 'Bob-IDE Announcements' section and a 'Bob' character icon. The bottom navigation bar includes 'Bob Findings', 'Live Share', 'Bob - Settings', and a gear icon.

File Edit Selection View Go Run ...

EXPLORER

NO FOLDER OPENED

You have not yet opened a folder.

Open Folder

Opening a folder will close all currently open editors. To keep them open, [add a folder](#) instead.

You can clone a repository locally.

Clone Repository

To learn more about how to use Git and source control in Bob-IDE [read our docs](#).

You can open a folder containing a .NET project or solution, or create a new .NET project.

Create .NET Project

You can also open a Java project folder, or create a new Java project by clicking the button below.

Create Java Project

> SOURCE VIEW

> PROJECT EXPLORER

> SOURCE IMPACTS

> MAVEN

Bob Findings 0 Live Share

Search

Welcome

Bob-IDE

Editing evolved

Start

New File...

Open File...

Open Folder...

Clone Git Repository...

Connect to...

Walkthroughs

Get started with ...

Customize your editor, learn the basics, and start coding

Learn the Funda...

Get Star... Updated

ARCAD... Updated

GitHub ... Updated

More...

Recent

ibmi-company_system-fork C:\...

ibmi-company_system C:\Users...

bob-recursive-example C:\User...

vscode-ibmi-bob C:\Users\Sanj...

carbon-demo C:\Users\Sanjula...

More...

Bob-IDE

Announcements

Hi, I'm Bob

Ask me questions or let me code for you.

What would you like me to help with?

(@ to add context, / for commands, hold shift to drag in files/images)

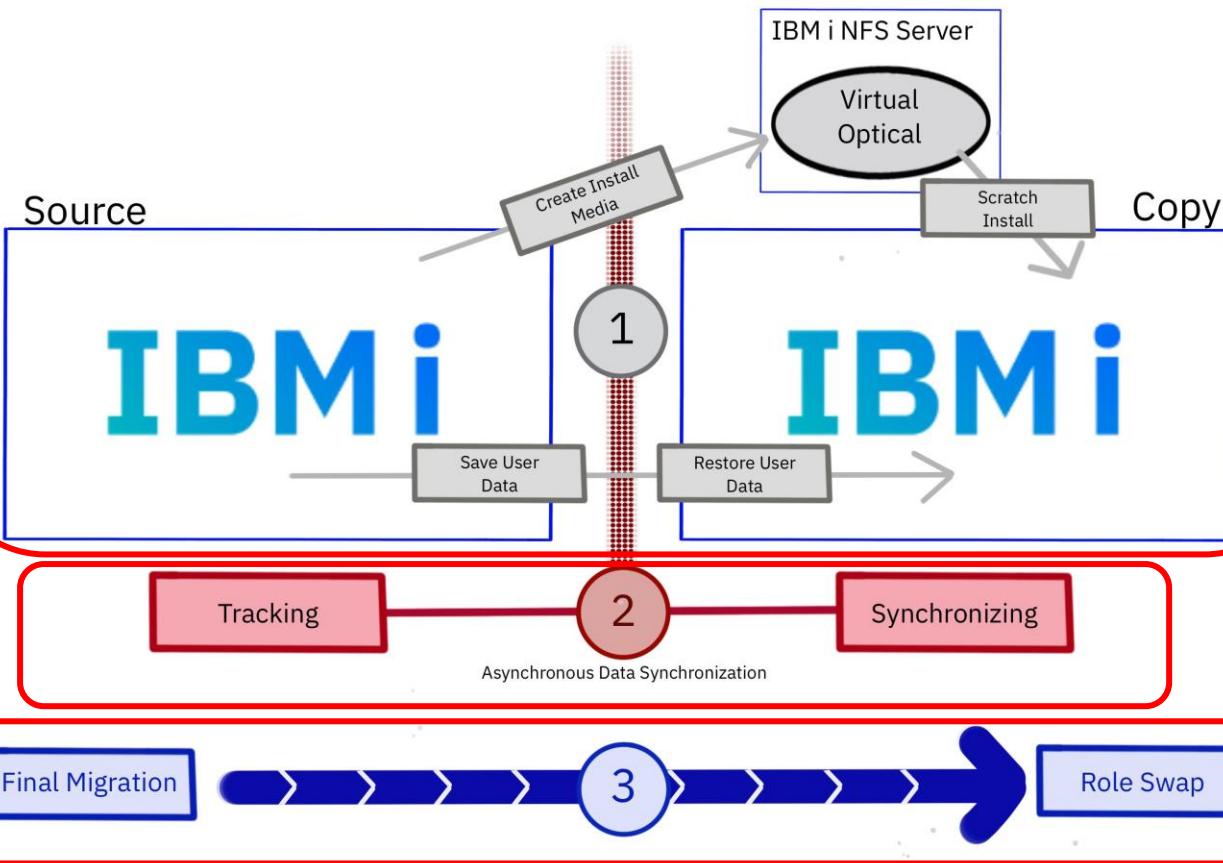
Advanced

Bob - Settings

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MWA – Migrate While Active

MWA – Migrate While Active



New IBM i tool to simplify migration to new server or Cloud

1. Full backup to seed migration (This can be an existing Save21)
2. IBM i based tracking and synchronizing changes
3. Role Swap to new server

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Multi Factor Authentication for IBM i

Multi Factor Authentication for IBM i

System Requirements

IBM i

- Security level 40 or 50
- Password level 4
- Additional Sign-on Factor Enabled *New

| CHGSYSVAL SYSVAL(QSECURITY) VALUE(50)
| CHGSYSVAL SYSVAL(QPWDLVL) VALUE(4)
| CHGSECA ADLSGNFAC(*ENABLED) -- Requires IPL to activate

Display Security Attributes	
User ID number	: 250
Group ID number	: 104
Security level	: 50
Password level	: 4
Additional sign-on factor	: *ENABLED
Allow change of security related system values	: *YES
Allow add of digital certificates	: *YES
Allow service tools user ID with default and expired password to change its own password	: *NO
Allow add and remove of password exit programs	: *YES
Allow change of additional sign-on factor	: *YES
Authority collection for objects active	: *NO

Multi-Factor Authentication (MFA) Configuration				
Security Configuration Information				
Name	Current Value	Possible Values	Description	
Additional Signon Factor	ENABLED	DISABLED, ENABLED	The current value of the additional sign-on factor security attribute. Can be changed using the Change Security Attributes (CHGSECA) command.	
Pending Additional Signon Factor		DISABLED, ENABLED	The additional sign-on factor security attribute that the system will use after the next IPL	
Allow Additional Signon Factor Change	YES	YES, NO	Whether the additional sign-on factor security attribute is allowed to be changed using the Change Security Attributes (CHGSECA) command. The Change SST Security Attributes (CHGSSTSECA) command can be used to change this attribute.	

Multi Factor Authentication for IBM i

TOTP Key Generation - Command

IBMi

Note that you need to sign on with the user profile that is setting up their TOTP Key.

```
CHGTOTPKEY TOTPKEY(*EN)
```

```
TOTP key . . . . . : PGWG KZ6T 7RY AZLG PPDJ MHFN GYQ MDAF
Copy/paste version . . . : PGWGKZ6T7RRYAZLGPPDJMHFNCPYMDAF
```

```
Recovery key . . . . . : 47BB3CD184DC10789972AD8B601E98ED
                           2520AD706D6D6697C905BD6EC6DA8BCA
```

The TOTP key has been saved in your profile. It must also be entered into your TOTP generator client application, without the blanks.

Save the recovery key for this TOTP key in a safe place.

Enter=Continue

Multi Factor Authentication for IBM i

IBMi

Validate MFA Key and Save Recovery Key

X

The new MFA key has been saved to your user profile. Validate that the MFA code allows this user profile to sign on, and then save the recovery key.

1. Saved MFA Key:

Using your client generator application, enter the MFA key below (without blanks) or scan the QR code

GDFUSRYOJSVBZHYNOE7TQX23MKOJM7N7



GDFU SRYO JSVB ZHYN OE7T QX23 MKOJ M7N7



2. Validate MFA Key:

Enter your user profile password and the MFA code from your client generator application to validate that your user profile can sign on with MFA

Password:

MFA Code:

Validate

3. Recovery Key:

Save the recovery key in a safe place, it can be used in place of the user password as a one time recovery if the MFA key and code are not working

E273115536A989E1486672EABF2E3844EA2BCAB611A2D4E99C0F2DCF581A2800



Multi Factor Authentication for IBM i

TOTP Optional Interval

IBM i

TOTP optional interval == *NONE (0) "Absolute Mode"

- Each password-based authentication requires a valid TOTP token
 - Clients using cached passwords under the covers will fail
 - Some clients could prompt for each unique connection to the system

TOTP optional interval > 0 [1-720 minutes]

- User performs initial password-based authentication with TOTP token
 - Timeout interval starts
 - Subsequent password-based authentication requests only require a password until the interval expires

Multi Factor Authentication for IBM i

Additional Factor Unaware Interfaces

No ability to change 100s of interfaces like Filezilla

Solution → myAmazingPa\$\$w0rd:358538

: interpreted as a separator in the password field

System Admin educates users to append TOTP value to password on interfaces without additional factor prompt

Doesn't work if client uses password substitution

IBM i



Multi Factor Authentication for IBM i

Things to remember

- You need an IPL to Activate MFA but this does not enable it for all users
- Your system does not need access to a network for MFA to work
- Your system clock is vital for MFA to work, it needs to be accurate
 - Consider enabling NTP client (Network Time Protocol)
- You can administer MFA via the 5250 Green Screen (If you hate yourself)
- Using Navigator for i to administer MFA is a much better experience

Multi Factor Authentication for SST – Step 1

Enable MFA for SST with CHGSSTSECA (No IPL Required)

Change SST Security Attributes (CHGSSTSECA)

Type choices, press Enter

Requesting SST user ID	> <u>ROWTON</u>	Character value
Requesting SST user ID pwd	
Requesting SST user ID TOTP . . .	_____	Character value
Service tools password level . . .	2	Number, *SAME, 2, 3
Maximum sign-on attempts	> 5	2-15, *SAME
Password expiration interval . . .	180	1-366, *SAME, *NOMAX
Duplicate password control . . .	10	1-32, *SAME, *NONE
Additional sign-on factor	> <u>*ENABLED</u>	*SAME, *ENABLED, *DISABLED
Allow security sysval changes . . .	*YES	*SAME, *YES, *NO
Allow add of digital certs	*YES	*SAME, *YES, *NO
Allow SST password change	*NO	*SAME, *YES, *NO
Add and remove pwd exit pgms . . .	*YES	*SAME, *YES, *NO
Chq additional sign-on factor . . .	*YES	*SAME, *YES, *NO

Start Service Tools (STRSST) Sign On

SYSTEM: JARJAR76

Service tools user ID.
Service tools password

Additional factor

Multi Factor Authentication for SST – Step 2

Enabling MFA for individual Service Tools users, requires two steps.

1. Assign the user a TOTP keys. This is done with the CHGSSTKEY command.

Change SST TOTP Key (CHGSSTKEY)

Type choices, press Enter.

Requesting SST user ID	> <u>ROWTON</u>	Character value
Requesting SST user ID pwd . . .	-	
Requesting SST user ID TOTP . . .	> _____	Character value
TOTP key	> <u>*GEN</u>	_____

2. With a TOTP key established this authentication method needs to be enabled for the user.

Change Service Tools User ID (CHGSSTUSR)

Type choices, press Enter.

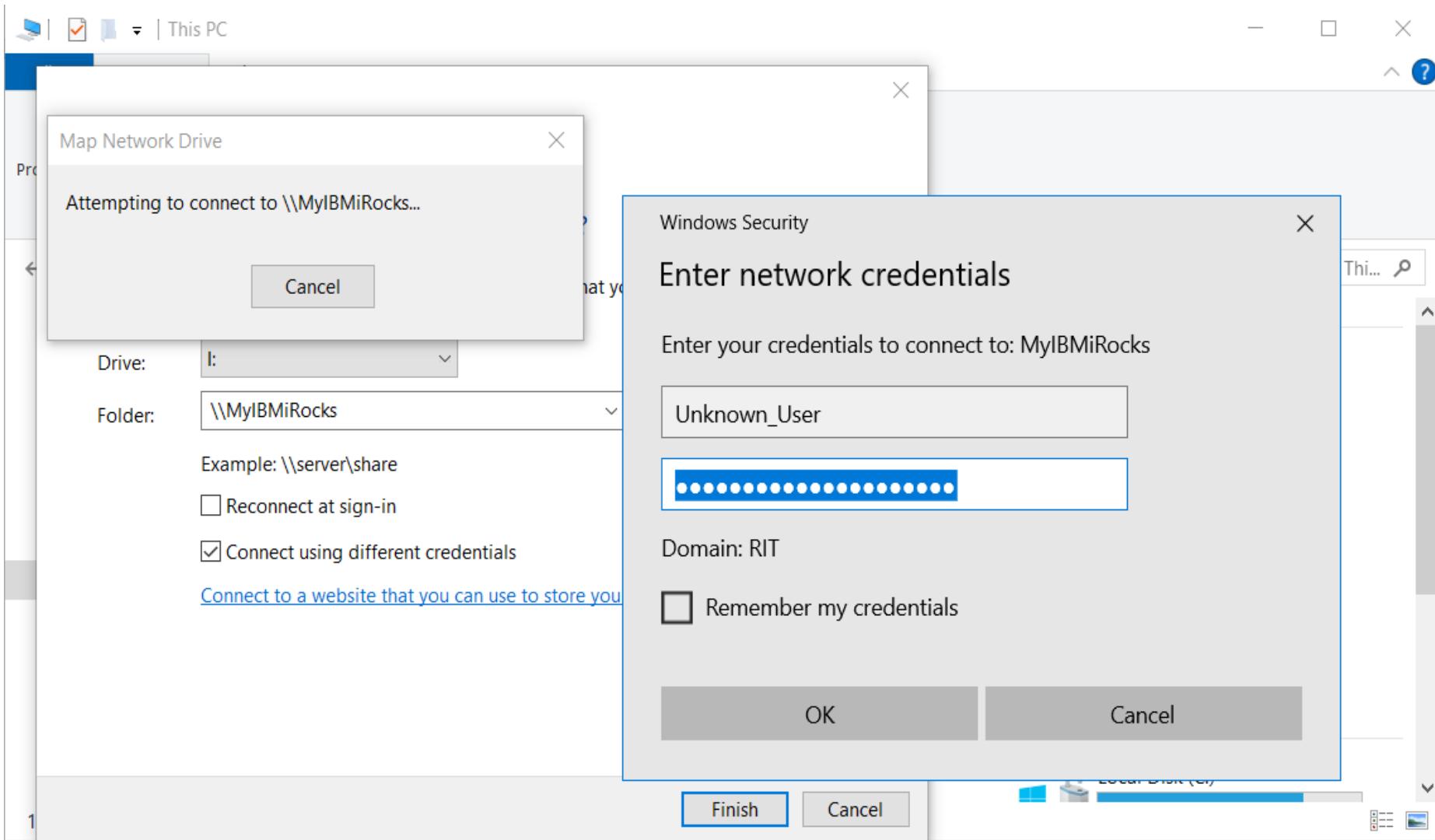
Requesting SST user ID	> <u>ROWTON</u>	Character value
Requesting SST user ID pwd . . .	> _____	
Requesting SST user ID TOTP . . .	> _____	Character value
Service tools user ID	> <u>ROWTON</u>	Character value
Service tools user ID info:		
Password	> <u>*SAME</u>	_____
Status	> <u>*ENABLED</u>	*SAME, *ENABLED, *DISABLED
Set password to expired . . .	> <u>*NO</u>	*SAME, *NO, *YES
Text 'description'	> <u>'ROWTON SUPPORT USER'</u>	_____
Linked profile	> <u>*NONE</u>	Name, *SAME, *NONE
Password expiration interval	> <u>*SSTATR</u>	1-366, *SAME, *SSTATR, *NOMAX
Authentication method	> <u>*TOTP</u>	*SAME, *NONE, *TOTP

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Log NetServer Unknown User in Audit Journal

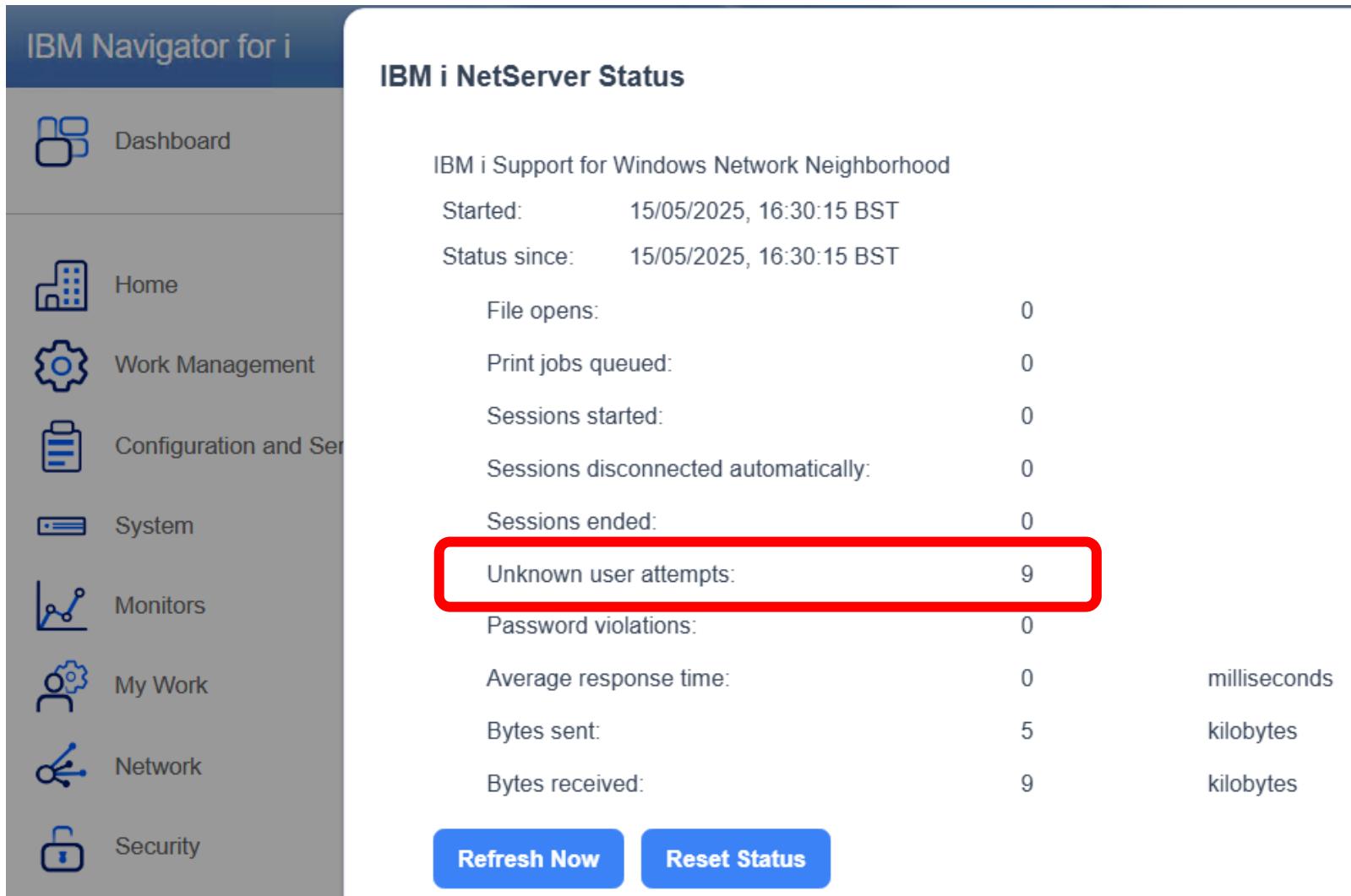
Log NetServer Unknown User in Audit Journal

Previously, if a user that didn't exist on IBM i tried to connect to NetServer, this was the only way you could tell. It was not logged as a VP entry in the Audit Journal



Log NetServer Unknown User in Audit Journal

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IBM Navigator for i

IBM i NetServer Status

IBM i Support for Windows Network Neighborhood

Started:	15/05/2025, 16:30:15 BST
Status since:	15/05/2025, 16:30:15 BST
File opens:	0
Print jobs queued:	0
Sessions started:	0
Sessions disconnected automatically:	0
Sessions ended:	0
Unknown user attempts:	9
Password violations:	0
Average response time:	0 milliseconds
Bytes sent:	5 kilobytes
Bytes received:	9 kilobytes

Refresh Now Reset Status

Log NetServer Unknown User in Audit Journal

In IBM i 7.6 if a user that didn't exist on IBM i tried to connect to NetServer, **this is logged as a VP entry in the Audit Journal**

```
select Entry_Timestamp ,  
       interpret(substr(entry_data, 32, 10) as char(10)) as user_name ,  
       Remote_Address , case interpret(substr(entry_data, 1, 1) as char(1))  
       when 'P' then 'NetServer password incorrect'  
       when 'D' then 'NetServer user disabled'  
       when 'U' then 'Unknown User'  
       else interpret(substr(entry_data, 1, 1) as char(1))  
       end as error_type from table (qsys2.display_journal ('QSYS', 'QAUDJRN' ,  
       journal_entry_types => 'VP', starting_timestamp => CURRENT_TIMESTAMP - 1 HOURS));
```

ENTRY_TIMESTAMP	USER_NAME	REMOTE_ADDRESS	ERROR_TYPE
2025-05-15 16:40:34.814784	ADM_STEVEB	<NULL>	Unknown User
2025-05-15 16:40:34.824368	ADM_STEVEB	<NULL>	Unknown User
2025-05-15 16:40:34.831216	ADM_STEVEB	<NULL>	Unknown User
2025-05-15 16:40:34.839056	ADM_STEVEB	<NULL>	Unknown User
2025-05-15 16:40:34.845696	ADM_STEVEB	<NULL>	Unknown User
2025-05-15 16:40:35.396928	ADM_STEVEB	<NULL>	Unknown User
2025-05-15 16:40:35.401408	ADM_STEVEB	<NULL>	Unknown User
2025-05-15 16:40:35.406672	ADM_STEVEB	<NULL>	Unknown User
2025-05-15 16:41:29.070256	BADUSERS	<NULL>	Unknown User

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Correct total disk space reported by NetServer

Correct total disk space reported by NetServer

Home / IBM-I-3509 /
IBMI-I-2758

Add a new idea

Subscribed

17

VOTED

Status	Delivered
Workspace	IBM i
Categories	IFS (Integrated File System) and Servers
Created by	Guest
Created on	15 Apr, 2019

RELATED IDEAS

DSPSYSSTS ASTLVL(*BASIC) :
Show "system storage" in GB or
TB.

Long response time on IFS
shares opening ex. Word & Excel

Profile usage space issue

Apple Mac Os Support in
Netserver

Correct total disk space reported by NetServer for Windows mapped drive of IFS share

See this idea on ideas.ibm.com

Windows mapped drive to IFS share on system with 24TB disk space shows total disk space of 7.99 TB with 14.5TB used. Usage bar is showing red. NetServer is not reporting correct disk space on large systems according to IBM support.

Use Case:

User created mapped drive to IFS share in Windows.
Share should show correct disk space used and available on IBM I system.

Idea priority Low

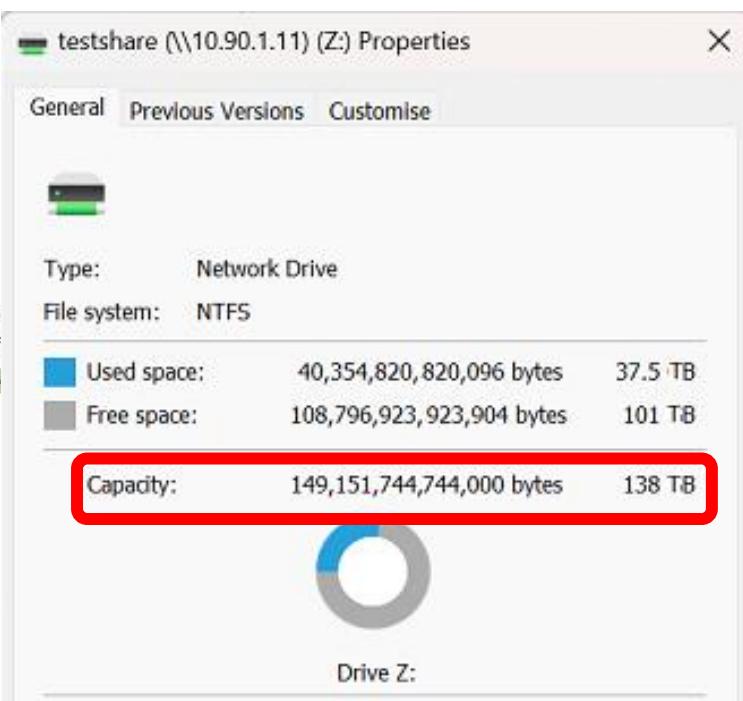
COMMENTS 4

MERGED IDEAS 1

IFS

Is it possible to solve the size limit problem in ifs? The File Server (where the maximum number of blocks to a 32 bit value. If there is more storage, the f

over 7 years ago in IBM i / IFS (Integrated File System) and Servers 2

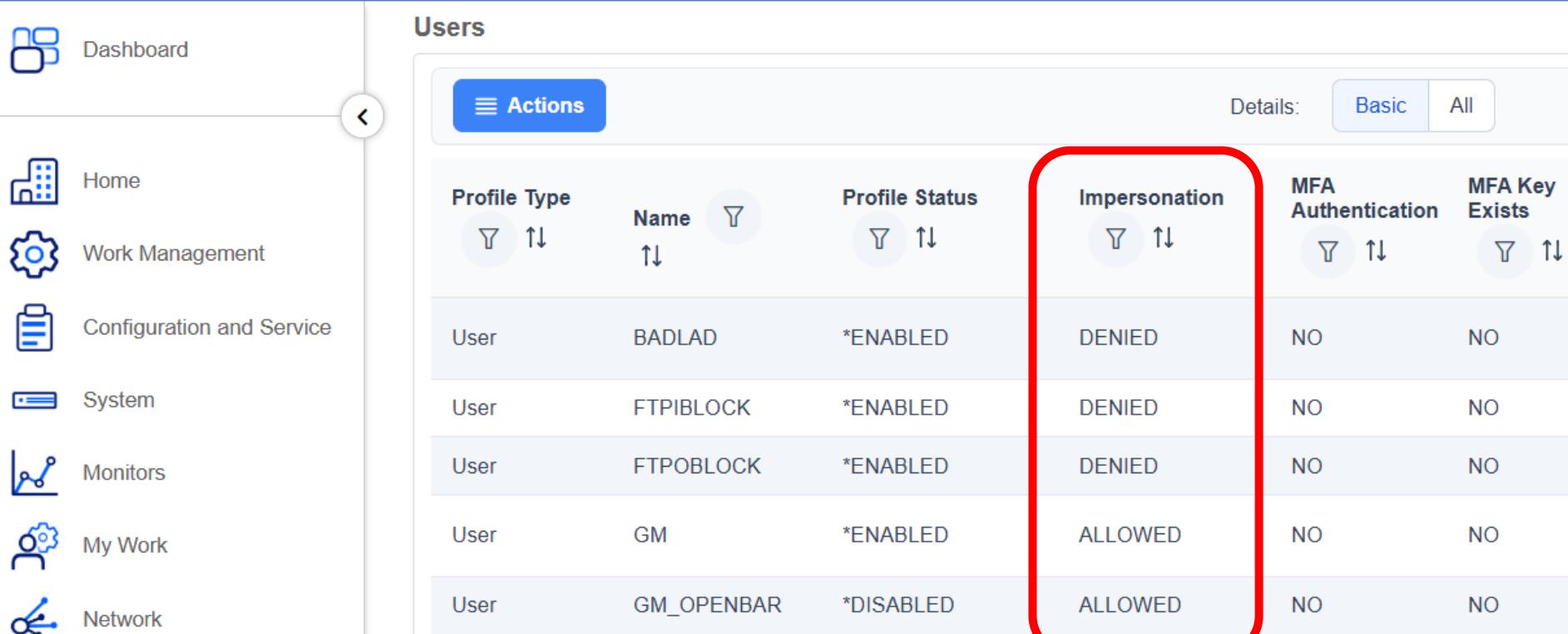


11

Disable User Impersonation

Disable User Impersonation

IBM Navigator for i



The screenshot shows the 'Users' list in IBM Navigator for i. The table has columns for Profile Type, Name, Profile Status, Impersonation, MFA Authentication, and MFA Key Exists. The 'Impersonation' column is highlighted with a red box. The data is as follows:

Profile Type	Name	Profile Status	Impersonation	MFA Authentication	MFA Key Exists
User	BADLAD	*ENABLED	DENIED	NO	NO
User	FTPIBLOCK	*ENABLED	DENIED	NO	NO
User	FTPOBLOCK	*ENABLED	DENIED	NO	NO
User	GM	*ENABLED	ALLOWED	NO	NO
User	GM_OPENBAR	*DISABLED	ALLOWED	NO	NO

Disable User Impersonation

IBM Navigator for i

- Dashboard
- Home
- Work Management
- Configuration and Service
- System
- Monitors
- My Work
- Network
- Security
- Users and Groups

FTPOBLOCK - Properties

User:

Name * : **FTPOBLOCK**

Description: **Test FTP outbound Blocked**

Class: **User**

Password:

Password:

User must change password at next logon

Additional Authentication Options:

MFA Authentication using a TOTP device

MFA key exists:

Last changed:

Exit Program Authentication

Deny Impersonation ⓘ

Impersonation

When the value of Impersonation is DENIED for a profile, the operating system will restrict the ability to impersonate this user profile without authentication. The system will block any attempt to swap to this user profile without specifying a password. This is controlled by setting the function usage ID QIBM_RUN_UNDER_USER_NO_AUTH to DENIED for this profile.

Disable User Impersonation

Will this break my application?

To help users prepare for this new impersonation restriction, a new audit journal entry is added: **GR-F with *USAGEWARN in field 1.**

To enable this support for a user profile, enter the following CL command:

```
CHGUSRAUD USRPRF(TIMUSER1) AUDLVL(*AUTWARN)
```

After the command is run, any operation that would have failed when the previous profile was added to the QIBM_RUN_UNDER_USER_NO_AUTH function usage ID, generates an Audit entry.

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Secure Passwords by Default

Secure Passwords by Default



Alexis de Tocqueville

Alexis Charles Henri Clérel, comte de Tocqueville

Originator of ***“Tyranny of the Default”*** in 1840

Source and picture courtesy of Wikipedia

System Value	Description	Default for IBM i 7.5 and older	Default for IBM i 7.6
QPWDLVL	Password level	0 = Not case sensitive, maximum 10 characters	3 = Case sensitive with maximum of 128 characters
QPWDRULES	Password Rules	Minimum Length 6 Characters Maximum Length 8 Characters	<ul style="list-style-type: none">*ALLCRTCHG = Enforce password rules in Create/Change User Profile*LMTPRFNAME = Password cannot contain Upper Case Profile Name*MINLEN15 = Minimum Password length of 15 characters*REQANY3 = Password must contain at least 3 of the 4 groups<ul style="list-style-type: none">> Uppercase letters> Lowercase letters> Numbers> Special characters

9

Nav4i Makeover

Nav4i Makeover

IBM Navigator for i

ross.rownlonacme.com rowlon

[Dashboard](#)

[Multisystem](#)

[Add New Node](#)

[Home](#)

[Serviceability](#)

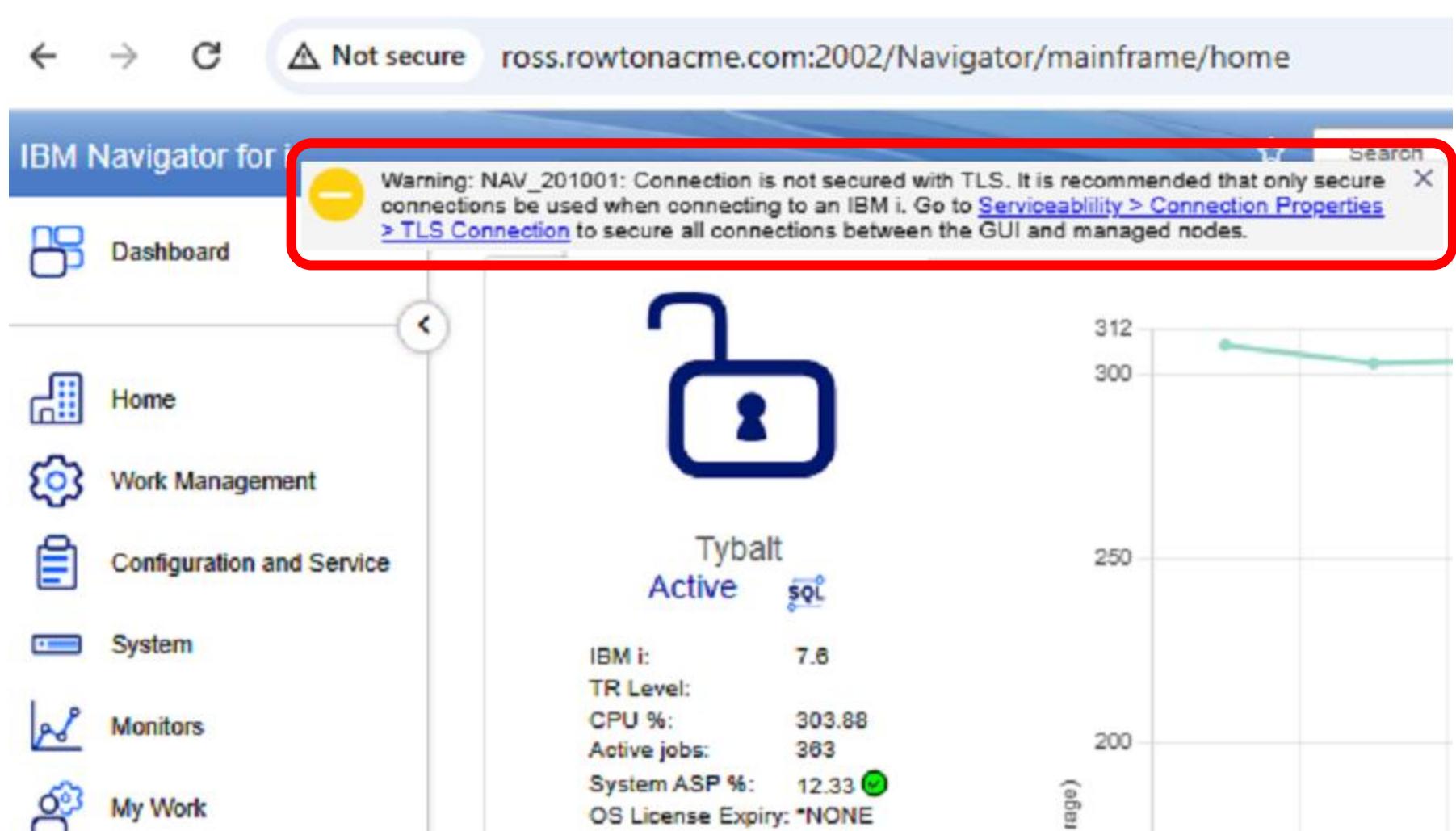
RITmon **IBM i:** 7.3 **CPU:** 8.73 **System ASP %:** 66.47 **OS License Expiry:** *NONE
Rowton Dev Server [Manage →](#)

Tez **IBM i:** 7.4 **CPU:** 1.94 **System ASP %:** 76.23 **OS License Expiry:** *NONE
iUG Backend Dev System [Manage →](#)

Ross **IBM i:** 7.5 **CPU:** 2.94 **System ASP %:** 72.56 **OS License Expiry:** *NONE
Rowta Production Server [Manage →](#)

Tybalt **IBM i:** 7.6 **CPU:** 307.76 **System ASP %:** 12.32 **OS License Expiry:** *NONE
IBM 7.6 Test Server [Manage →](#)

Nav4i Makeover



Not secure ross.rowtonacme.com:2002/Navigator/mainframe/home

IBM Navigator for i Search

Dashboard

Home

Work Management

Configuration and Service

System

Monitors

My Work

Warning: NAV_201001: Connection is not secured with TLS. It is recommended that only secure connections be used when connecting to an IBM i. Go to [Serviceability > Connection Properties > TLS Connection](#) to secure all connections between the GUI and managed nodes.

Tybalt
Active 

IBM i:	7.6
TR Level:	303.88
Active jobs:	363
System ASP %:	12.33 
OS License Expiry:	*NONE

rage)

Nav4i Makeover



8

QIBM_IOSYSCFG_VIEW Function

QIBM_IOSYSCFG_VIEW Function

QIBM_IOSYSCFG_VIEW Function ID

IBM i

- New IBM-supplied function ID
 - Defaults to *DENIED access
 - Does not use *ALLOBJ
- Provides users the ability to view input/output system configuration information without *IOSYSCFG Special Authority
- Read-only operations check for *IOSYSCFG or QIBM_IOSYSCFG_VIEW
 - Over one hundred interfaces documented in:
 - Security Reference -> IBM-supplied function IDs -> Table 1: Base operating system (5770SS1)
- Some create/change/delete operations require *IOSYSCFG for the first time with 7.6 in addition to the view operation requiring *IOSYSCFG or QIBM_IOSYSCFG_VIEW
- A couple tactical band-aids from prior releases superseded by the QIBM_IOSYSCFG_VIEW

7

Configure Host Server

Configure Host Server

Configure Host Server (CFGHOSTSVR)

IBMi

- Enable, disable, or allow loopback for non-secure connections on the supported host servers
 - Central, Database, Data Queue, File, Network Print, Remote Command, and Signon
- Provides architected and auditable way to comply with port scan audits by disabling non-secure ports
 - Currently administrators add a TCP port restriction as a circumvention
 - This prevents non-TLS applications from using the host servers over loopback
- Configure the type of connections allowed for each host server (CNNTYPE)
 - *SECURE - Only TLS/Secure connections allowed. Insecure port not started
 - *SECLOOP - TLS/Secure connections and insecure loopback connections allowed
 - Insecure port is not listening on the external interfaces
 - *ALL – All insecure and secure connections allowed

```
Configure Host Server (CFGHOSTSVR)

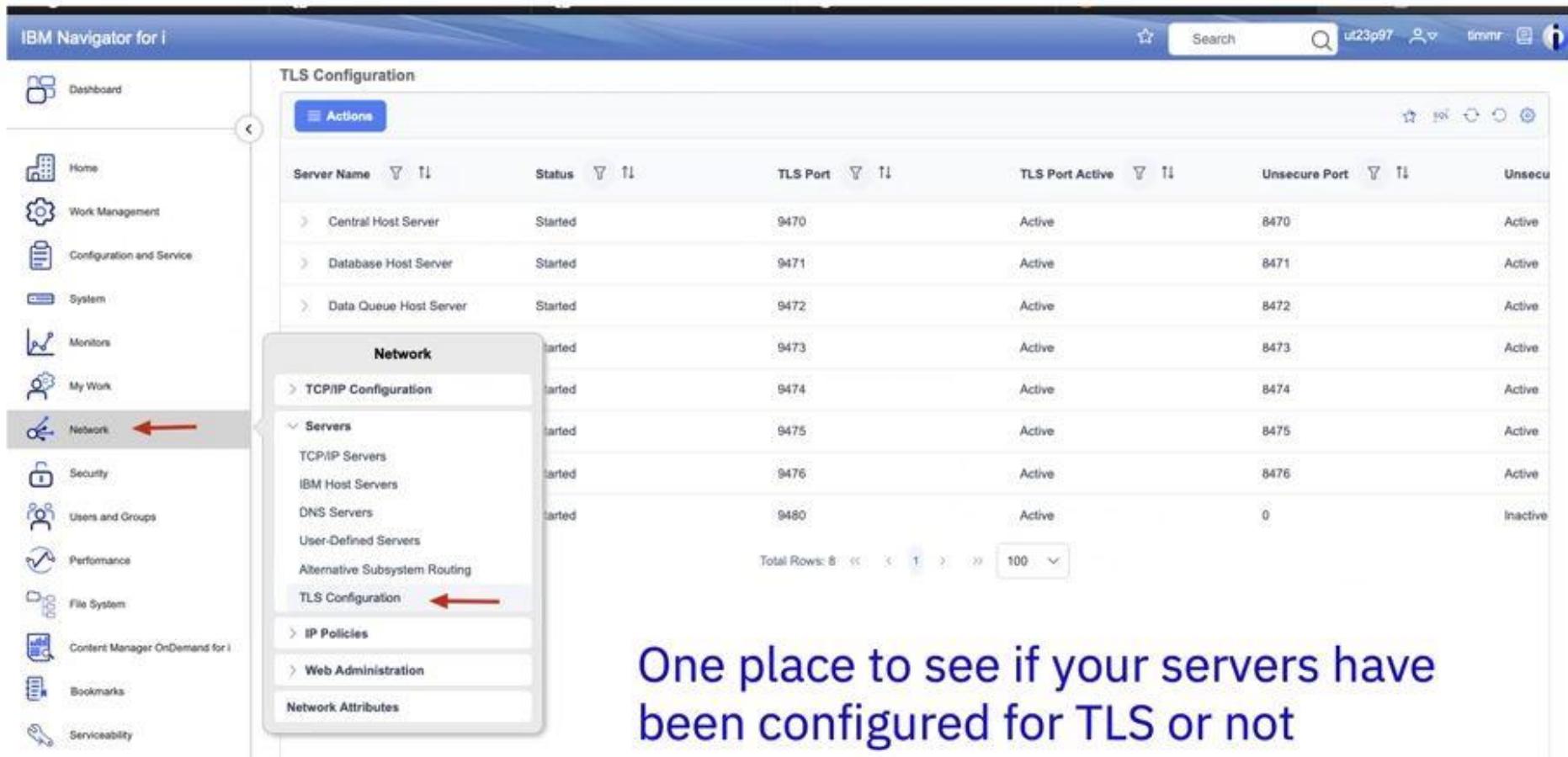
Type choices, press Enter.

Configuration . . . . . . . . . > *CNNTYPE           *CNNTYPE, *LISTEN
Server type . . . . . . . . . > *RMTCMD           *ALLCFG, *CENTRAL...
                           + for more values
Connection type . . . . . . . *SECURE           *SAME, *ALL, *SECLOOP...
```

6

Navigator for i TLS Configuration

Nav4i TLS Configuration



IBM Navigator for i

Dashboard

Home

Work Management

Configuration and Service

System

Monitors

My Work

Network ←

Security

Users and Groups

Performance

File System

Content Manager OnDemand for i

Bookmarks

Serviceability

TLS Configuration

Actions

Server Name	Status	TLS Port	TLS Port Active	Unsecure Port	Unsecu
Central Host Server	Started	9470	Active	8470	Active
Database Host Server	Started	9471	Active	8471	Active
Data Queue Host Server	Started	9472	Active	8472	Active
Network	Started	9473	Active	8473	Active
TCP/IP Configuration	Started	9474	Active	8474	Active
Servers	Started	9475	Active	8475	Active
TCP/IP Servers	Started	9476	Active	8476	Active
IBM Host Servers	Started	9480	Active	0	Inactive
DNS Servers	Started				
User-Defined Servers					
Alternative Subsystem Routing					
TLS Configuration ←					
IP Policies					
Web Administration					
Network Attributes					

Total Rows: 8 << < < 1 > >> 100 <<

One place to see if your servers have been configured for TLS or not

5

QIBM_QSY_AUTH MFA integration

QIBM_QSY_AUTH MFA integration

How can you integrate your application with IBM i 7.6 MFA?

Integrated architecture for customer customization (*REGFAC)

IBMi

Single authentication exit point - QIBM_QSY_AUTH

- Verifies operating system authentication factors first (if applicable)
 - Password and *TOTP (if configured)
 - Kerberos and SSH (indirectly before calling OS methods for associating a user profile)
 - Delegates additional factor(s) to exit program
- Called for these actions
 - Sign-on
 - GetProfileHandle (The set does association but only call on generate operation)
 - Kerberos and SSH (typically do one of these two actions and would set interface indicator flag if IBM code)
 - GenerateProfileToken (The set does association but only call on generate operation)
 - Netserver remote file access
- Future feeder to machine learning telemetry and AI opportunities
 - Real time prevention vs post attack discovery through logs

www.ibm.com/docs/en/i/7.6.0?topic=ssw_ibm_i_76/apis/xsyauth.html

4

Improvements to WRKPTFGRP

Improvements to WRKPTFGRP

- Ever wondered when PTFs were installed?
- Now you can see the Applied Date

```
Display PTF Group                                         System: JARJAR
PTF group . . . . . : SF99960
Level . . . . . : 1
Status . . . . . : Installed
Target release . . . . . : V7R6M0
Applied Date . . . . . : 26/04/25 19:47:25
Text . . . . . : DB2 FOR IBM I

Type options, press Enter.
 5=Display PTF details  6=Print cover letter  8=Display cover letter
 10=Display PTF apply information
```

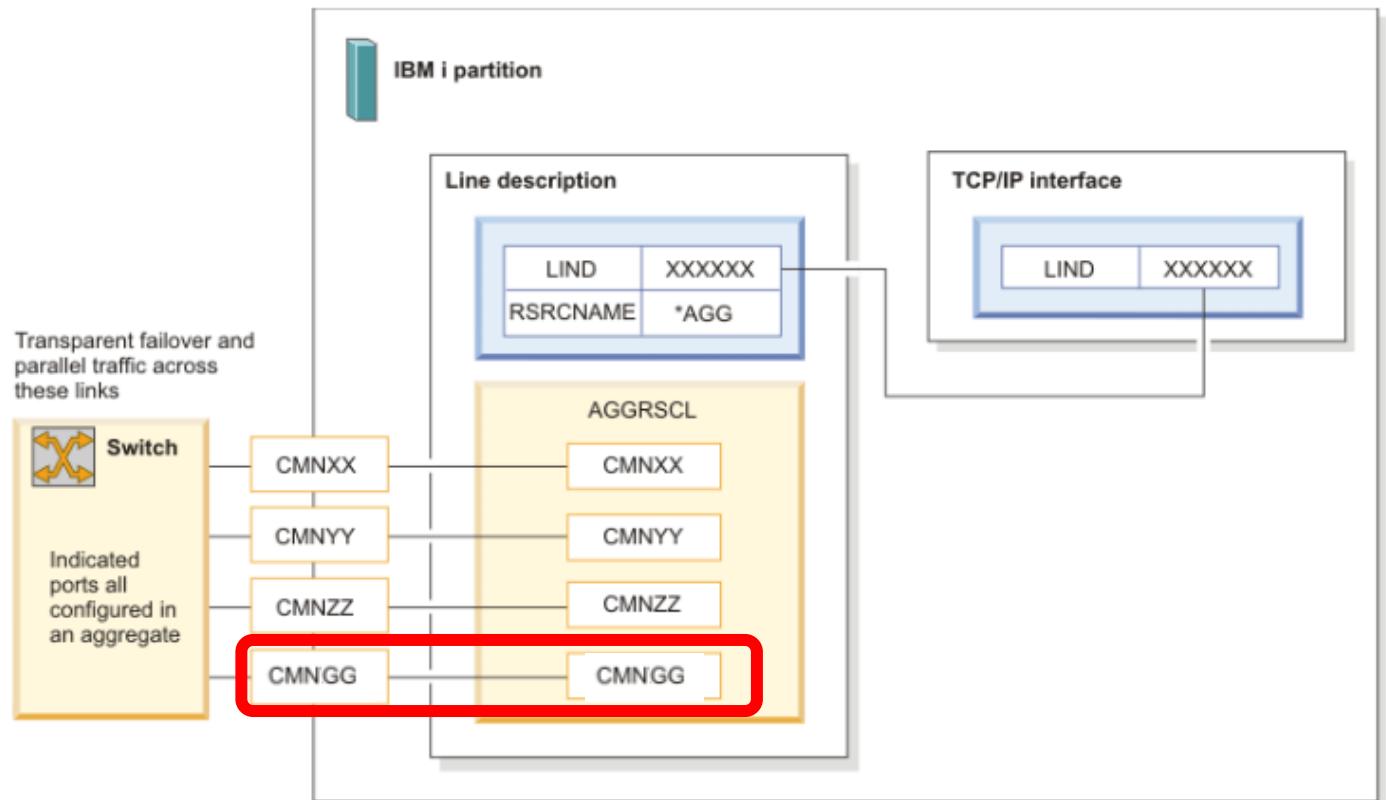
Opt	PTF ID	Product ID	Release	Status
—	SJ04866	5770SS1	V7R6M0	Temporarily applied
—	SJ04754	5770SS1	V7R6M0	Temporarily applied
—	SJ04681	5770SS1	V7R6M0	Temporarily applied
—	SJ04656	5770SS1	V7R6M0	Superseded
—	SJ04600	5770SS1	V7R6M0	Temporarily applied

3

Change Aggregated Ethernet whilst active

Change Aggregated Ethernet whilst active

- Aggregated ethernet is not new (around since 7.1)
- New is ability to change NIC ports whilst in use
This removes a common need for downtime



<https://www.ibm.com/docs/fi/i/7.6.0?topic=ethernet-link-aggregation>

2

ASP 1 Encryption

ASP 1 Encryption

- Encryption of Data at Rest
- Including the operating system
- Works on internal IBM i storage
- Helps you meet compliance requirements
- Can be started or stopped whilst system in use
- Requires SS1 Option - Encrypted ASP Enablement

Install Licensed Programs				System: JEDI76
Type options, press Enter. 1=Install				
Option	Licensed Program	Product Option	Description	
—	5770SS1	38	PSF for IBM i Any Speed Printer Support	
—	5770SS1	39	International Components for Unicode	
—	5770SS1	41	HA Switchable Resources	
—	5770SS1	42	HA Journal Performance	
—	5770SS1	43	Additional Fonts	
—	5770SS1	44	Encrypted Backup Enablement	
1	5770SS1	45	Encrypted ASP Enablement	
—	5770SS1	47	IBM Advanced Data Security for i	
—	5770SS1	48	Db2 Data Mirroring	
—	5761AP1	*BASE	IBM Advanced DBCS Printer Support for i	
—	5761AP1	1	Adv DBCS Printer Support - IPDS	
—	5770BR2	*BASE	IBM Backup, Recovery and Media Services for i	

More...

F3=Exit F11=Display status/release F12=Cancel F19=Display trademarks

ASP 1 Encryption

Enabling ASP 1 Encryption

- STRSST
- Work with Disk Configuration
- Work with Encryption
- Start Encryption on ASPs

Confirm Start Encryption on ASPs

—
Data will be encrypted on the selected ASPs.
For independent ASPs, data will be encrypted when they are
varied on.

Note: Do not stop encryption on the ASPs until this operation
has completed. Do not change the data encryption key on the
ASPs until this operation has completed.

Press Enter to confirm your choices to start encryption.
Press F12 to return to change your choices.

Option	ASP	----Protected----			---Unprotected---		
		Size	%Used	Size	%Used	Status	
1	1	3200000	19.39%	0	0.00%	Encrypting	

F12=Cancel

ASP 1 Encryption

Things to consider

- The Encryption Keys are stored in the LIC
- You should take a SAVSYS or Go Save 21 after
- Do not IPL server whilst starting/stopping encryption
- There is a performance overhead (circa 20%)
- If you are moving from HDD to NVMe I doubt you'll notice
- If i/o performance is vital consider alternatives
 - NVMe Key Management (requires HMCs)
 - External Storage

1

IBM i 7.6 Redbook

IBM i 7.6 Features and Functions

Henry Vo

Larry Bolhuis

Ivaylo Bozhinov

Steve Bradshaw

Rohit Chauhan

Ryan Cooper

Scott Forstie

Ben Huntsman

Marius le Roux

Michael Miller

Harold Nelson

Tim Rowe

Prashant Sharma

Shamej Sreedharan

Rudi van Helvoort

Tim Simon



IBM Power



Redbooks

Questions?



Bonus

Free IBM i LLPs 7.6, 7.5, 7.4, 7.3, 7.2 & 7.1

IBM i Simplification - announced and effective June 1, 2022



- [June 1, 2022 Price Action - Decrease in Selected IBM i LPPs and IBM i SP Monthly Base LPP bundle \(5770-MP1\)](#)

Products/Options: change from separately charged to \$0 price:

- Still ordered via e-config
- Price is \$0
- Entitlements are still created, and for those products and options which are keyed, keys are still generated

AFP Font Collection (5733-B45)

InfoPrint Server (5722-IP1)

AFP DBCS Fonts (5769-FN1)

AFP Fonts (5769-FNT)

XML Toolkit (5733-XT2)

Advanced DBCS Support (5761-AP1)

Rational Application Management Toolset (5770-AMT)

Advanced Job Scheduler (5770-JS1)

Performance Tools (5770-PT1)

Db2 Query Mgr & SQL Dev Kit (5770-ST1)

IBM i Access Family (5770-XW1)

IBM i Optional Features: (5770-SS1)

Media & Storage Extension – Opt 18

Db2 Symmetric Multiprocessing – Opt 26

Db2 Multisystem – Opt 27

PSF 1-55 IPM Support – Opt 35

PSF 1-100 IPM Support – Opt 36

PSF AnySpeed – Opt 37

HA Switchable Resource Opt 41

HA Journal Performance – Opt 42

Products/Options: remaining separately charged

IBM i operating system (5770-SS1)

BRMS (5770-BR1)

PowerHA for i (5770-HAS)

Rational Development Studio (5770-WDS)

Cloud Storage Solutions (5733-ICC)

Db2 Mirror (5770-DBM)

Db2 Web Query (5733-WQx)

Rational Developer for i (5733-RDW)

IBM i Optional Features: (5770-SS1)

Db2 Data Mirroring (**comes with Db2 Mirror) – Opt 48

Products/Options that no longer require license keys after PTF is installed:

5770-SS1 Option 18: Media & Storage Extension
5770-SS1 Option 36: PSF 1-55 IPM Support
5770-SS1 Option 37: PSF 1-100 IPM Support
5770-SS1 Option 38: PSF AnySpeed
5770-SS1 Option 41: HA Switchable Resource
5770-SS1 Option 42: HA Journal Performance
5761-AP1 Advanced DBCS Printer Support
5761-CM1 Communications Utilities
5722-IP1 InfoPrint Server
5770-JS1 Advanced Job Scheduler
5770-PT1 Performance Tools
5770-QU1 Query for i
5770-ST1 Db2 Query Mgr & SQL Dev Kit
5770-XW1 IBM i Access Family

PTFs introduced through APAR SE79942 removed the need for licensing the above

IBM i 7.6 Included in base
IBM i 7.5 PTF [SJ05538](#)
IBM i 7.4 PTF [SJ05537](#)
IBM i 7.3 PTF [SJ02851](#)
IBM i 7.2 PTF [SJ02850](#)
IBM i 7.1 PTF [SI84890](#)