



# Things **i** Love about **IBM i**

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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 IBM i 7.6



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

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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 Io




List of Savf Files By Size.sql X

```
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
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
ICEPKGTMP	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:

Number of rows to retrieve at a time:

Text to display when value is 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:  ( 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
DIOBLI	DIOBNM	DIOBAT	DIOBSZ
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
ICEPKGTMP	ICEPKG	SAVF	254,472,192
QGPL	NVSCLIB	SAVF	178,016,256
QGPL	NVSLLIB	SAVF	174,219,264
RITMONDEV	QMGTOOL720	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

IBM Navigator for i

Active Jobs-Basic

Details: ☒ Basic ☐ Work ☐ All

Job Name	Detailed Status	Current User
Filter	Filter	_no
QSERVER	EVTW	QPGMR_NC
QPWFSEVSO	TIMW	QSECOFR_NC
QZDASOINIT	TIMW	QSECOFR_NC
QP0ZSPWT	SELW	QSECOFR_NC
QPWFSEV	PSRW	QUSER_NC
QPWFSEV	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

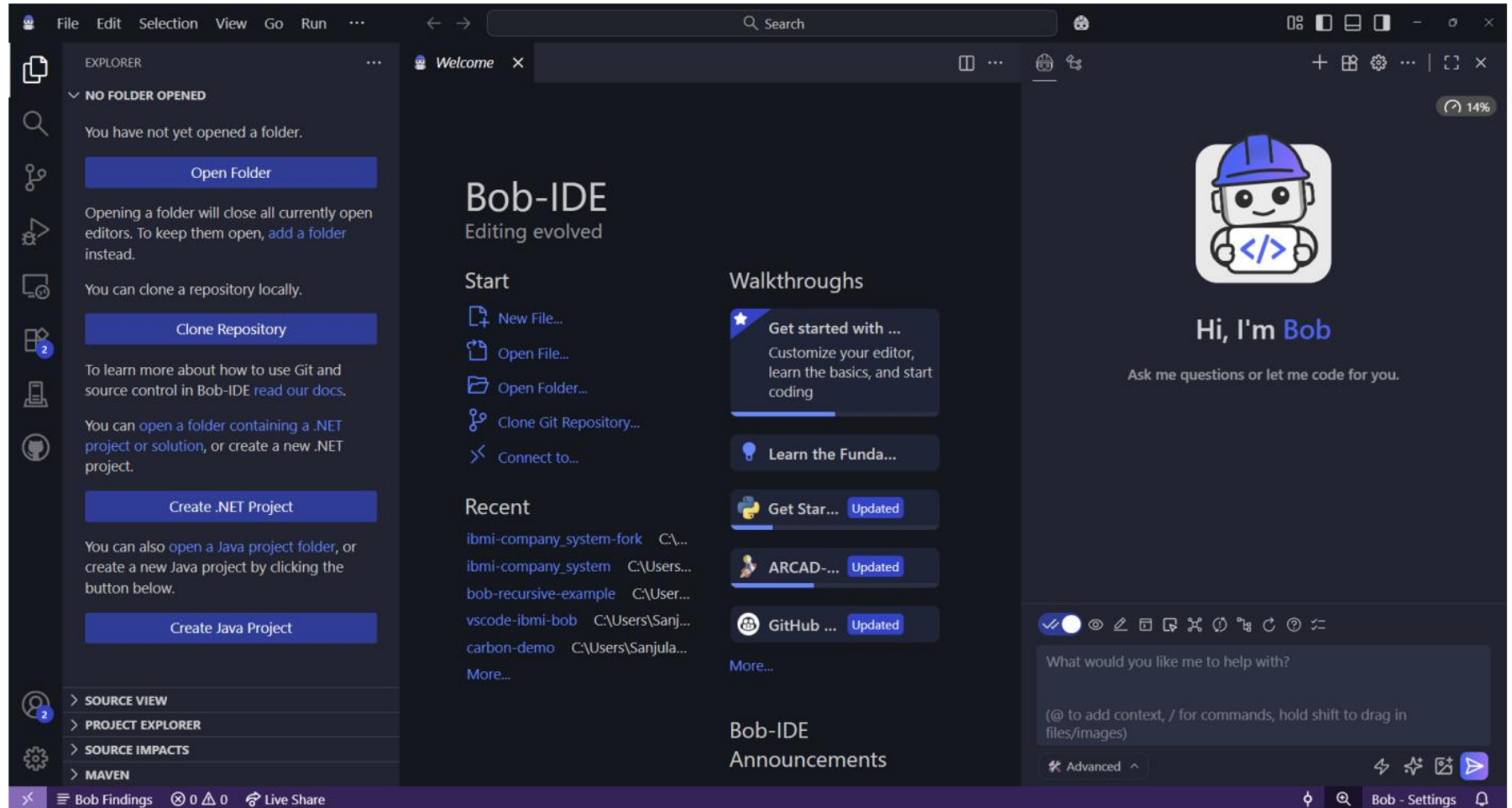
Documentation, diagrams

New Code création,

New application creation

Bob is NOT JUST an RPG assistant

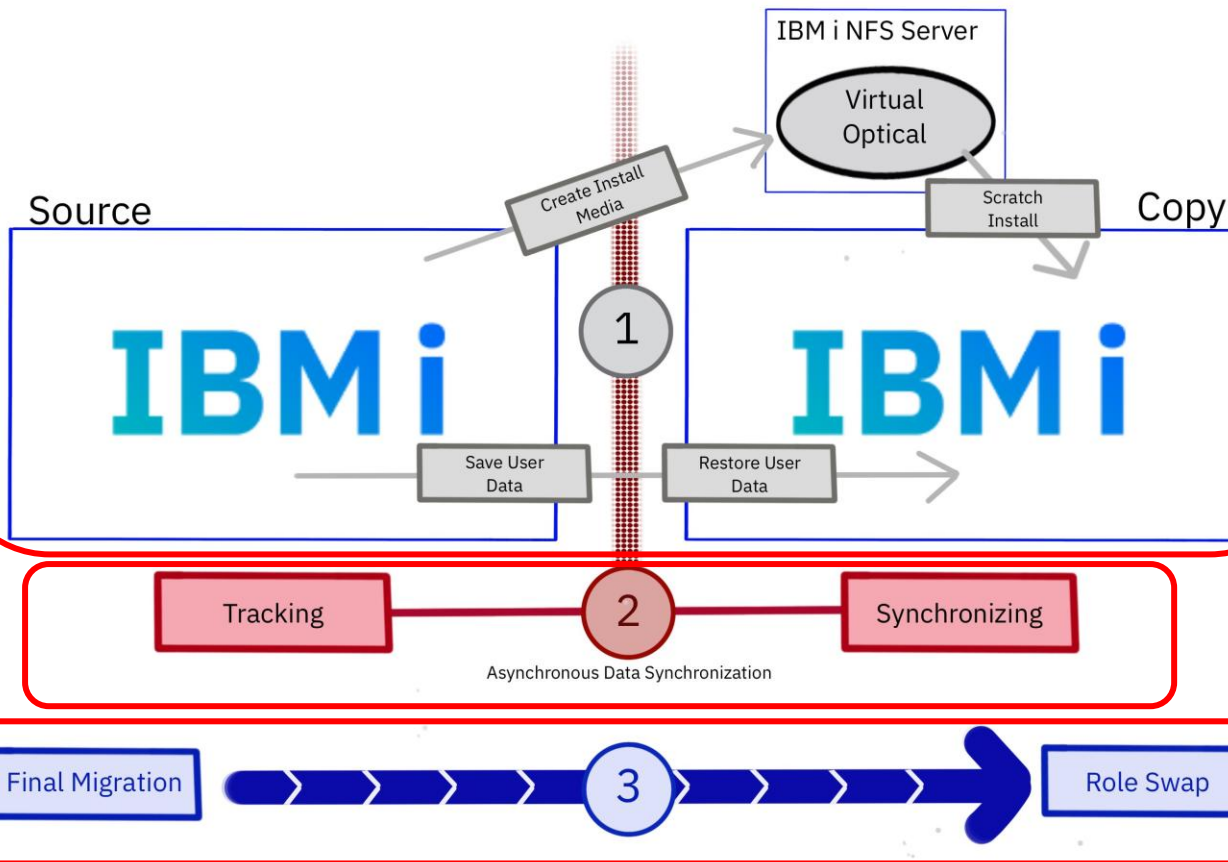
# Project Bob



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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

IBM i 7.4 through 7.6

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**Multi Factor Authentication for IBM i**

# Multi Factor Authentication for IBM i



## System Requirements

- Security level 40 or 50 | CHGSYSVAL SYSVAL(QSECURITY) VALUE(50)
- Password level 4 | CHGSYSVAL SYSVAL(QPWDVL) VALUE(4)
- Additional Sign-on Factor Enabled <sup>\*New</sup> | 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

Actions

Name	Current Value	Possible Values	Description
Filter	Filter	Filter	Filter
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

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

```
CHGTOTPKEY TOTPKEY(*NEW)
```

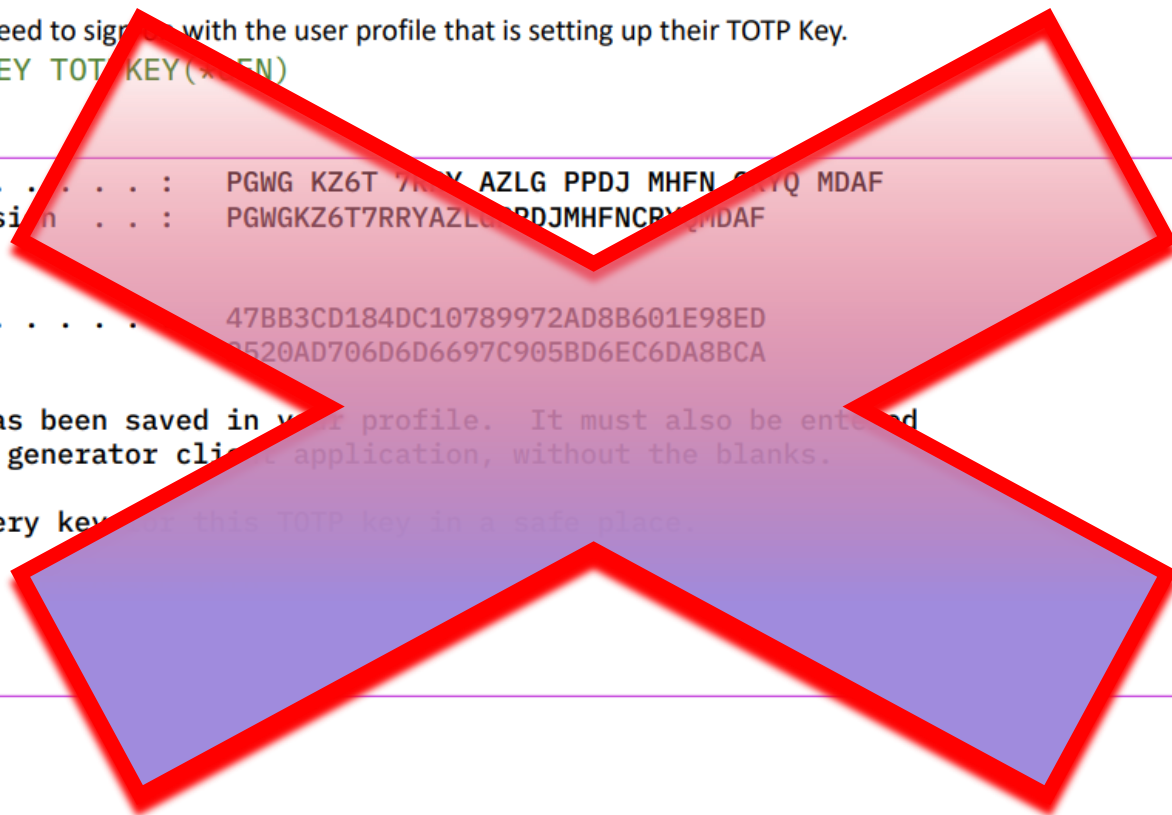
```
TOTP key . . . . . : PGWG KZ6T 7RRY AZLG PPDJ MHFN G1TQ MDAF  
Copy/paste version . . : PGWGKZ6T7RRYAZLGPPDJMHFNCPYMDAF
```

```
Recovery key . . . . . : 47BB3CD184DC10789972AD8B601E98ED  
                        3520AD706D6D6697C905BD6EC6DA8BCA
```

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

IBM i

## Validate MFA Key and Save Recovery Key



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

GDFUSRYOJSVBZHYN0E7TQX23MKOJM7N7



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

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 . . . . .	> ROWTON	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 . . . .	18	1-32, *SAME, *NONE
Additional sign-on factor . . . . .	> *ENABLED	*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
Chg 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 . . . . . > ROWTON           Character value
Requesting SST user ID pwd . . . . .                -
Requesting SST user ID TOTP . . . . .                Character value
TOTP key . . . . . > *GEN
```

- 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 . . . . . > ROWTON           Character value
Requesting SST user ID pwd . . . . .                -
Requesting SST user ID TOTP . . . . .                Character value
Service tools user ID . . . . . > ROWTON           Character value
Service tools user ID info:
  Password . . . . .                *SAME
  Status . . . . .                *ENABLED          *SAME, *ENABLED, *DISABLED
  Set password to expired . . . . .                *NO           *SAME, *NO, *YES
  Text 'description' . . . . .                'ROWTON SUPPORT USER'

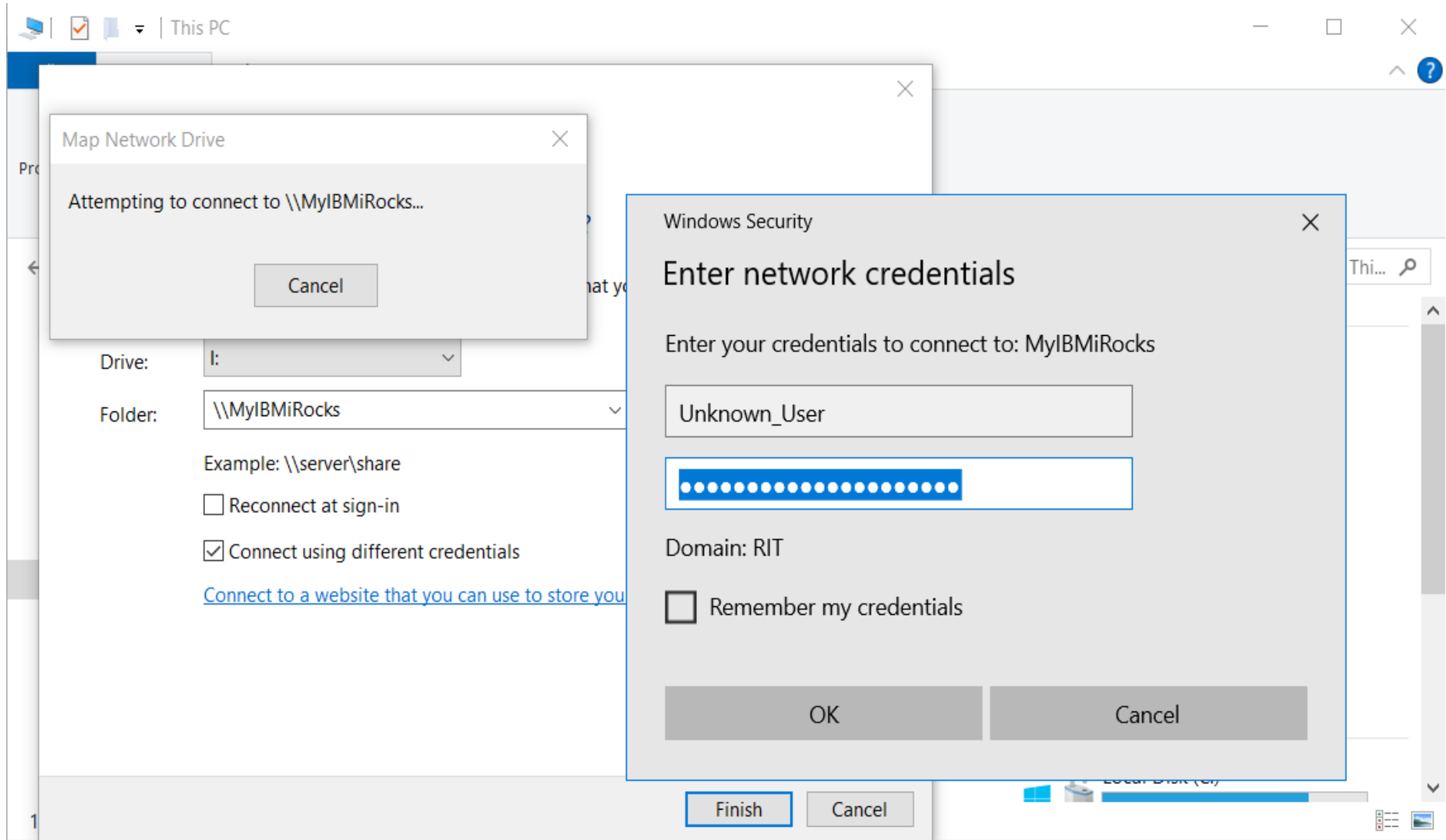
Linked profile . . . . .                *NONE           Name, *SAME, *NONE
Password expiration interval . . . . .                *SSTATR        1-366, *SAME, *SSTATR, *NOMAX
Authentication method . . . . .                *TOTP          *SAME, *NONE, *TOTP
```

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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


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


IBM Navigator for i


 Dashboard


 Home


 Work Management


 Configuration and Security

 System

 Monitors

 My Work

 Network

 Security

## 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

# 12

**Correct total disk space reported by NetServer**

# Correct total disk space reported by NetServer

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.

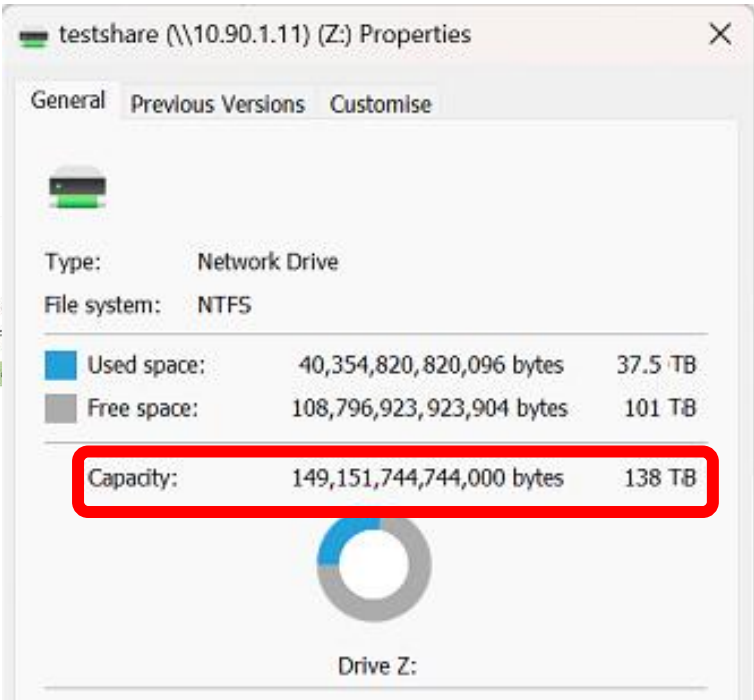
Idea priority Low

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 Deliv



11

**Disable User Impersonation**

# Disable User Impersonation

IBM Navigator for i

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

## Users

Actions			Details: Basic All			
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

The screenshot displays the 'FTPOBLOCK - Properties' window in IBM Navigator for i. The left sidebar shows navigation options: Dashboard, Home, Work Management, Configuration and Service, System, Monitors, My Work, Network, Security, and Users and Groups. The main panel shows the user's details:

- User:**
  - Name \*: FTPOBLOCK
  - Description: Test FTP outbound Blocked
  - Class: User
- Password:**
  - Password:
  - ☐ User must change password at
- Additional Authentication Options:**
  - ☐ MFA Authentication using a T
  - MFA key exists:
  - Last changed:
  - ☐ Exit Program Authentication C
  - ☒ Deny Impersonation ⓘ

A modal dialog titled 'Impersonation' is overlaid on the right side of the screen. It contains the following text:

**Impersonation** [X]

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.



# 10

**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	*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 > Uppercase letters > Lowercase letters > Numbers > Special characters

9

**Nav4i Makeover**

# Nav4i Makeover

IBM Navigator for i

ross.rowtonacme.com

rowton

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

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.

Dashboard

Home

Work Management

Configuration and Service

System

Monitors

My Work

Tybalt  
Active

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

312  
300  
250  
200

range)

# Nav4i Makeover



8

**QIBM\_IOSYSCFG\_VIEW Function**

# QIBM\_IOSYSCFG\_VIEW Function

## QIBM\_IOSYSCFG\_VIEW Function ID



- 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)

- 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

Search

ut23p97

timmr

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	Unse
> 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
	Started	9473	Active	8473	Active
	Started	9474	Active	8474	Active
	Started	9475	Active	8475	Active
	Started	9476	Active	8476	Active
	Started	9480	Active	0	Inactive

Total Rows: 8

1

100

Network

> TCP/IP Configuration

< Servers

TCP/IP Servers

IBM Host Servers

DNS Servers

User-Defined Servers

Alternative Subsystem Routing

TLS Configuration

> IP Policies

> Web Administration

Network Attributes


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) 

### 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](http://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

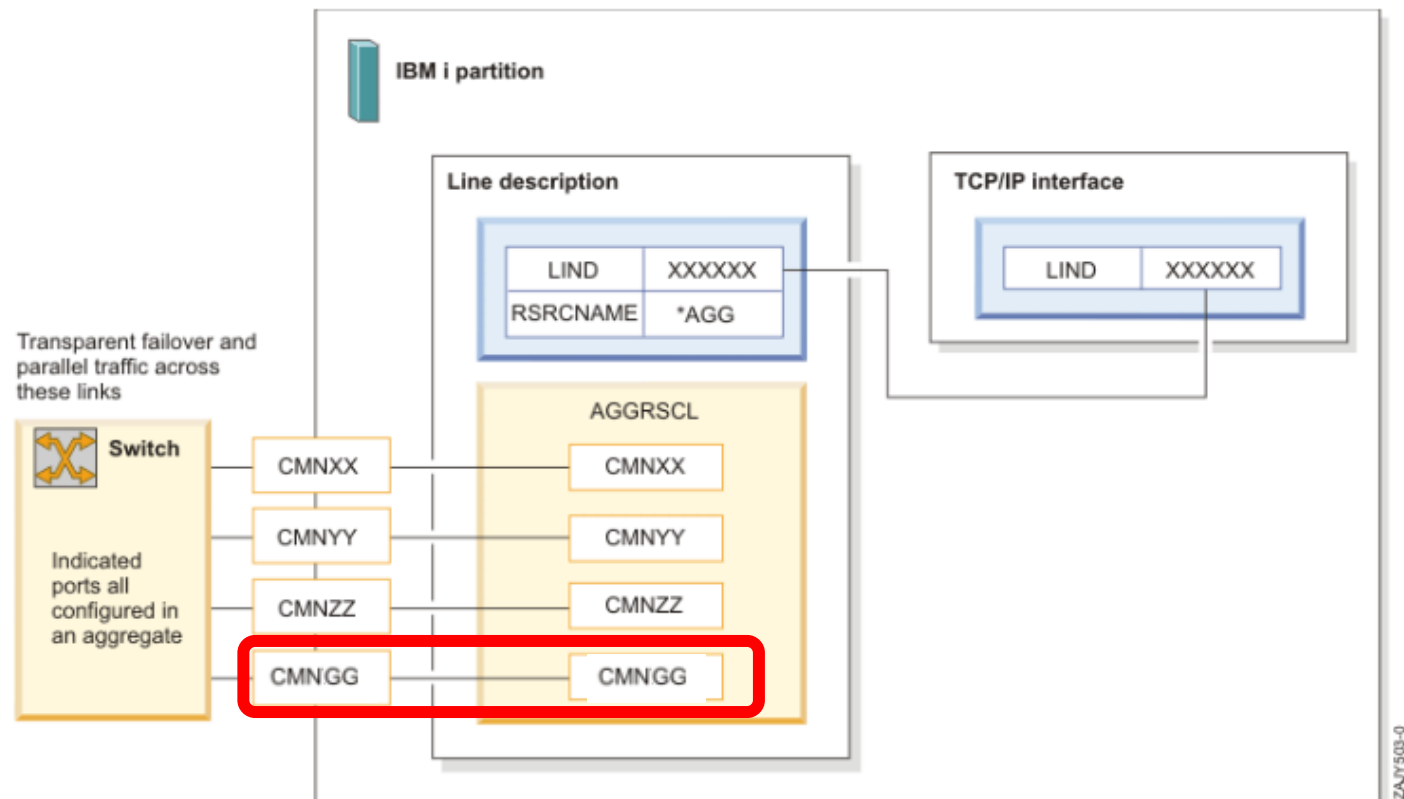


3

**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-----	Size	%Used	---Unprotected---	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 Redbook



## IBM i 7.6 Features and Functions

Henry Vo  
Larry Bolhuis  
Ivaylo Bozhinov  
Steve Bradshaw  
Rohit Chauhan  
Ryan Cooper  
Scott Forstle  
Ben Huntsman  
Marius le Roux  
Michael Milleri

Harold Nelson  
Tim Rowe  
Prashant Sharma  
Shamej Sreedharan  
Rudi van Helvoirt  
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](#)