



iTech Solutions Newsletter

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iTech Newsletter - April 2013

iTech Solutions because IBM i (AS/400, iSeries) didn't come with a System Administrator.

Dear FIRSTNAME,

i can do **anything** with iTech Solutions

It's a new look, with the same IBM i (AS/400 & iSeries) Technical Tips and content that you have come to expect from our monthly newsletter.

We wanted to change the color scheme, and bring our corporate colors all in line, and in fact align all our communications, messaging, blogs, and websites with the same look and feel. We hope you like the improvements. The technical content will not change one bit. We are committed to bringing you each month technical tips, insights into what is happening in the IBM i community, and to share knowledge with you to make your job easier.

IBM has publicly announced that IBM i 7.2 will be coming in Q2 of 2014. If you are still on V5R4, even more reasons to get current. Remember, you won't be able to upgrade from V5R4 directly to 7.2, you will have to upgrade first to either 6.1 or 7.1, so let's get that behind you now. Support for V5R4 ends on Sept 30, 2013. Let us know if you need help with an upgrade by contacting Paul at progers@itechsol.com.

This issue of our newsletter has seven articles. We are just back from COMMON in Austin Texas, and NEUGC in Framingham, Massachusetts. I selected this month's articles based upon some of the presentations that I did at these two conferences, and the questions people were asking. In the first article, let's make sure everyone understands about saving spool files using standard save commands. The second article is about our iTech Solutions monthly blog article incase you aren't subscribed. The third article is on using the Index Advisor to improve performance. The fourth article is about Intrusion Detection if your machine is on the Internet. The fifth article lists some of the upcoming events in which iTech Solutions will be participating. The sixth article discusses application modernization and a webcast we are sponsoring. The last article is for your reference with updated PTF information.

Please note that for all 7.1 customers that are on the Quarterly iTech Solutions PTF maintenance plan, we will be installing Technology Refresh 6 for you on your next application of PTFs.

iTech Solutions can help you improve performance, perform security audits; implement a High Availability solution; perform health checks, systems management, remote administration, PTF management, blade installations, Cloud based systems, Hosting, iSCSI configurations, and backup/recovery; upgrade an existing machine; or upgrade to a new machine. If you are thinking of LPAR or HMC, then think iTech Solutions. We have the skills to help you get the most out of your IBM i.

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Saving Spool Files

Did you know that starting with V5R4 you can now save spool files? I get asked on so many occasions from customers when we are doing a migration from their old machine to a new machine, or perhaps at a version upgrade “will I lose my spool files?”. The answer is that you can now backup your spool files inside of the output queue they reside in. This is great news when migrating from one machine to another, as in the past you would normally not be able to bring forth your spool files.

The parameter on either the SAVOBJ or SAVLIB command is SPLFDTA. The default is *NONE, which means no spool files are saved by default. If you would like to save your spool files, you enter *ALL for the SPLFDTA parameter. This gives you the ability to migrate all your spool files when doing a migration. One thing to make sure you understand is that backing up spool files will add a little time to the length of the backup. Every site will be different depending on the number of spool files that you have on your system. In most systems that I have implemented this on, it has been minor increase in the total backup time. Interestingly, the default on the RSTLIB & RESTOBJ commands for the SPLFDTA is *NEW, which means to restore them. You should only need to change your save, and your restore will automatically bring them down.

If you use GO SAVE 21 as the process to do a full system save, you will notice on the second screen (page down once) that there is an option to save spool files here as well. The default is *NONE to not save the spool files, but you can change that to *ALL and all your spool files will be saved.

I think that for disaster recovery, and even nightly backups that you should be saving your spool files. They are important to your users and a key component of your system.

Latest Blog



An upgrade to your current IBM i (OS/400 or i5/OS) operating system is something you've been putting off for quite some time. Can you afford to keep waiting? IBM already made the answer pretty clear by announcing that it will discontinue its support for V5R4 in six months. As we mentioned in our February newsletter after September 30, 2013, if you are running on V5R4 you will have no support from IBM, as you will be on an unsupported operating system.

Six months is all that stands between either having the latest IBM features or being locked into a costly system that will become obsolete.

Read the rest [here](#).

Index Advisor



Sometimes features go into a new release of IBM i and people just don't take advantage of them. The Index Advisor is a great example of something in V5R4 that not many people have taken advantage of. Last month we got a call from a customer that their response time on their 520 machine was suffering. Could we come in and find out what the problem was. Out goes the iTech Solutions Performance Investigation team to solve the problem. While they didn't have cool yellow trench coats and big magnifying glasses, they had a tool called Index Advisor, which comes free with IBM i as part of Navigator for i.

Now, we knew this customer quite well as they are on our PTF Quarterly Maintenance program, so they were up to the latest and greatest Cumulative PTFs, Database PTFs, Hiper PTFs, and about 5 or 6 other groups of PTFs. First thing we looked at was Disk I/O which the utilization was in the teens so that was great (that's arm utilization and not disk capacity). We then looked at memory paging, no problems there and Expert Cache had already been turned on by us a few years back, and CPU was in the 40 to 50% range most hours. This machine looked fine. Yet, they said "things" were slow. So, we asked if can we get a little more technical and what did they mean "things" were slow. They uttered the 5 letter word that frightens the most savage performance gurus, "Q-U-E-R-Y". You could feel the tension in the air, and hear the gasp of the investigators. We were about to call home for more clothes as we might be here a few days, when one of the performance detectives said "lets see what the Index Advisor says".

If you never used the Index Advisor it is part of Navigator for i and IBM i Access for Windows, and it basically displays the information that IBM i collects in the system table SYSIXADV and presents it to you in an easy to understand display. The Index Advisor provides a list of indexes (logical files) that it recommends that you create over specific physical files with a certain key structure to improve performance. There were 1,407

entries in the Index Advisor for this machine, and we certainly did not want to create them all. We needed to sort through this information and determine where the real problems were and what was just "noise". The first index it displayed had been created 128,000 times for each of the queries ran over it. This means every time a certain query had been run the system had to create a temporary index each and every time. But the index only took 1 second to build. So, it probably wasn't a real problem. Perhaps something we could come back to afterwards, but we needed to keep digging. We then found about ten indexes which the advisor was telling us they were being built, some a few times every day, and it was taking between 7 and 12 minutes each time to build the temporary indexes. We looked at the keys it recommended, and it made a lot of sense to build these permanent indexes. You can think of a permanent index as creating a logical file, but it is so much more powerful. This is due to some of the enhancements of SQL. We also found another temporary index which was getting created everyday and that was taking 52 minutes. Think about this, before the query could start reporting on the data, it would build a temporary index which would take 52 minutes and then when the query was done, delete that temporary index.

We created these 11 indexes, cleared the data on the index advisor so we could watch for new problems and we waited for the results. The customer called us a few days later to tell us that the system was flying, and that his users were extremely happy that their "queries were coming right out of the machine". This is another good example of the powerful tools that are part of IBM i. If you would like for us to come in and do this analysis for you or with you, just give us a call, and see how simple having iTech Solutions do the work for you can be, just email Paul Rogers at progers@itechsol.com.

Intrusion Detection

Is your IBM i (AS/400 or iSeries) on the internet? Did you ever wonder how secure it is? Do you know if it is getting scanned for open ports? Can it get hacked? Hit with a Denial of Service attack? You might be thinking that you have a firewall in place in your network, but you still might allow traffic through the firewall to your machine. Therefore, you are exposed. So what can you do? Set up Intrusion Detection.



Intrusion Detection (ID) came out with 6.1, and notifies you of attempts to hack into, disrupt, or deny service to the system. It also monitors for potential extrusions where your system might be used as the source of an attack. ID works by gathering information about attacks over your TCP/IP network. The best is there is a wizard in Navigator for i, that you can step through to set this up on your system. Once you set ID up, it can alert you via messages in QSYSOPR or any other message queue, or via email alerts. The wizard will build the default set of policies to manage the intrusion detection. Then you enable it, and you are being monitored. This doesn't prevent someone from attacking you, it only lets you know that you are under attack. I have put this on quite a few systems who thought they were protected, and we were amazed at what we saw attacking their machine. You will need *ALLOBJ and *IOSYSCFG to set this up.

The list of intrusions and extrusions are:

- Address poisoning
- Fraggle attack
- Internet Control Message Protocol (ICMP) redirect message
- Internet Protocol (IP) fragment
- Malformed packet
- Outbound raw
- Perpetual echo on User Datagram Protocol (UDP) ports
- Ping-of-death attack
- Restricted IP option
- Restricted IP protocol (intrusions only)
- Slow and fast scans
- Smurf attack
- SYN floods
- TCP ACK storm
- Traffic regulation conditions

If you need help in setting this up, or perhaps a health check of your system, [click here](#).

Upcoming Events

Some of the events that we will be speaking at, or exhibiting at are listed below. Don't forget the iTech Solutions web site at <http://www.itechsol.com>.



May 15 - Visit the iTech Solutions booth at the Long Island System's User Group www.lisug.org

June 4, MITECH Users group of Michigan www.gomitec.com in Livonia Michigan.

- What do you need to know when upgrading IBM i.
- Managing your IBM i with Navigator for i
- Tips and tricks to improve system performance and save disk space.
- A Programmers Future: Looking Back to See the Future

June 6, New Hampshire (NHMUG) & Vermont (VTMUG.ORG) user group meeting in West Lebanon, NH. See www.nhmug.org & www.vtmug.org

- A Programmers Future: Looking Back to see the Future.

June 19 to 21, COMMON Europe www.comeur.org in France.

- What do you need to know when upgrading IBM i.
- Building Virtual i partitions hosted by IBM i.
- Tips and tricks to improve system performance and save disk space.
- Understanding the HMC, FSP, IBM i, and Firmware.

September 9 to 11, St. Louis, MO COMMON Fall event. Sessions TBA.

Live Webcast - May 14

Deliver more than just an average experience, deliver ultimate applications! Integrate & modernize your desktop, web and mobile applications.

Join in this live webcast May 14, as looksoftware explore the key challenges facing IBM i users. [Register today!](#)

This webinar is ideal for anyone with an interest in extending the value of IBM i application investments - particularly those in the early stages of modernizing applications.

Hear how we can help you:

"Having spent the time to properly understand our situation, looksoftware were able to share our vision and run with it to help us create the system we knew we needed."

Rich Merchak IS Manager, Valley Power Systems

Please let us know if you have any questions regarding the content of the webcast, or contact [Tom Herman](#). Thank you from Pete Massiello and the team at looksoftware.

Release levels and PTFs

People are always asking me how often they should be performing PTF maintenance, and when is the right time to upgrade their operating system. I updated this article from last month with the current levels of PTFs. Let's look at PTFs. First, PTFs are Program Temporary Fixes that are created by IBM to fix a problem that has occurred or to possibly prevent a problem from occurring. In addition, some times PTFs add new functionality, security, or improve performance. Therefore, I am always dumbfounded as to why customers do not perform PTF maintenance on their machine at least quarterly. If IBM has come out with a fix for your disk drives, why do you want to wait for your disk drive to fail with that problem, only to be told that there is a fix for that problem, and if you had applied the PTF beforehand, you would have averted the problem. Therefore, I think a quarterly PTF maintenance strategy is a smart move. Many of our customers are on our quarterly PTF maintenance program, and that provides them with the peace of mind of knowing their system is up to date on PTFs. Below is a table of the major group PTFs for the last few releases. This is what we are installing for our customers on iTech Solutions Quarterly Maintenance program.

	7.1	6.1	V5R4	V5R3
Cumul Pack	13037	13058	12094	8267
Tech. Refresh	6			
Grp Hipers	84	145	194	169
DB Group	23	29	33	24
Java Group	12	23	32	23
Print Group	7	26	47	20
Backup/Recov.	24	37	53	33
Blade/IXA/IXS	13	25	15	-
HTTP	19	30	35	17
TCP/IP	7	15	22	16
Security	26	40	32	
High Availability	4	2		
Hardware	6	6		

The easiest way to check your levels is to issue the command WRKPTFGRP. They should all have a status of installed, and you should be up to the latest for all the above, based upon your release. Now there are more groups than the ones listed above,

but these are the general ones that most people require. We can help you know which group PTFs you should be installing on your machine based upon your licensed programs. Here is a nice tidbit. The Cumulative PTF package number is broken down as YDDD, where Y is the year and DDD is the day it was released. Therefore, if we look at the cumulative package for V5R4, the ID is 9104. We can determine that it was created on the 104th day of 2009, which is April 14, 2009. Look at your machine and this will give you a quick indication of just how far out of date in PTFs you may be. I left V5R1 & V5R2 off the list, because if you are on V5R1 or V5R2, you don't need to be worrying about PTFs, you really need to be upgrading your operating system. The same can be said for V5R3, but there are still customers who are on those releases.

If you have an HMC, you should be running V7R7.6 with Service Pack 2 and eFix MH01353 or V7R7.7 with Service Pack 1. If your HMC is a C03, then it should stay at V7R3.5 SP4.

For your Flexible Service Processor (FSP) that is inside your Power 5 or Power5+ (520, 515, 525, 550, 570), the code level of the FSP should be 01_SF240_418. Power 6 (940x M15, M25, & M50 machines, and 8203-E4A, 8204-E8A, & 8204-E4A) customers should be running EL350_143. For Power6 (MMA, 560, and 570 machines) your FSP should be at EM350_143. If you have a Power6 595 (9119) then you should be on EH350_143. Depending on which POWER7 model & generation (B, C, or D). The firmware level is AL730_114 for 8231-E1B, 8202-E4B, 8231-E2B, & 8205-E6B (710, 720, 730, or 740), AL730_114 for 750 (8233-E8B) & 755 (8236-E8C). Use AM730_114 for 770 (9117-MMB) & 780 (9179-MHB). The firmware level is AL740-100 for 8231-E1C, 8202-E4C, 8231-E2C, & 8205-E6C (710, 720, 730, or 740). Use AM740_100 for 770 (9117-MMC) & 780 (9179-MHC).

For Power7+ processors, the firmware level is AL770-038 for 8231-E1D, 8202-E4D, 8231-E2D, & 8205-E6D (710, 720, 730, or 740). Use AM770_038 for 750 (8408-E8D) & 760 (9109-RMD). Use AM760_062 for 770 (9117-MMD) & 780 (9179-MHD).

If you need help with upgrading your HMC or FSP just give us a call. We will be happy to perform the function for you or assist you in doing it. Contact [Pete Massiello](#).

iTech Solutions Group, LLC.
36 Mill Plain Rd. Suite 304, Danbury, CT 06811
203.744.7854

