



Evènement On-line 5 Nov





Comment prévenir les problèmes de performance avant qu'ils n'arrivent?

Ludovic Ménard

Un évènement organisé par :





















Quel est le problème ?

- Je ne comprends pas, mon système est lent
- Il n'y a que moi qui n'avance pas ?
- Je trouve que mon système est lent et pourtant je lui ai ajouté de la mémoire et du processeur
- Mes requêtes SQL sont lentes

En général, le problème devient exponentiel





- Vérifier le profil de partition
 - Informations de la HMC
 - Disques internes
 - Disques externes
 - Utilisation de VIOS
 - vSCSI
 - NPIV
 - Pas plus de 8 chemins

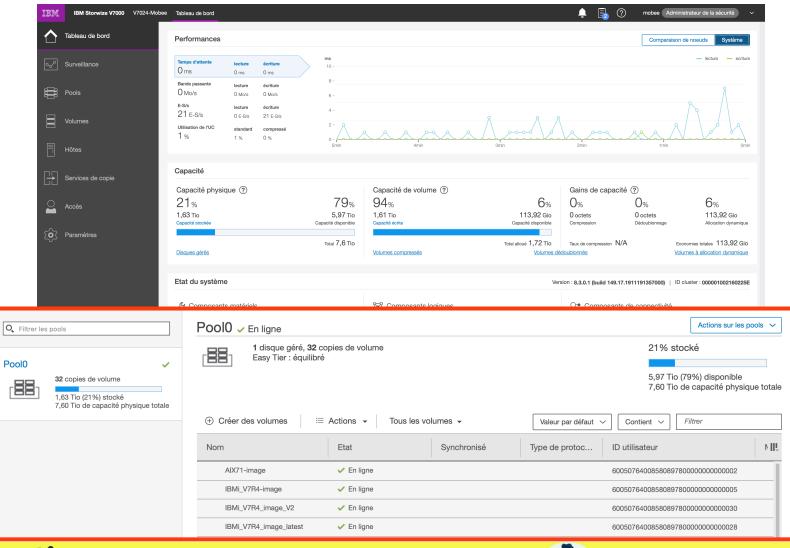
_			Display	Disk I	Path Status	
		Serial			Resource	Path
ASP	Unit	Number	Type	Model	Name	Status
1	1	Y20E9E0000C4	2145	050	DMP027	Active
		Y20E9E0000C4	2145	050	DMP037	Passive
		Y20E9E0000C4	2145	050	DMP025	Passive
		Y20E9E0000C4	2145	050	DMP038	Active
1	2	Y20E9E0000C5	2145	050	DMP029	Passive
		Y20E9E0000C5	2145	050	DMP040	Active
		Y20E9E0000C5	2145	050	DMP026	Active
		Y20E9E0000C5	2145	050	DMP039	Passive
1	3	Y20E9E0000C6	2145	050	DMP031	Active
		Y20E9E0000C6	2145	050	DMP042	Passive
		Y20E9E0000C6	2145	050	DMP028	Passive
		Y20E9E0000C6	2145	050	DMP041	Active
1	4	Y20E9E0000C7	2145	050	DMP034	Passive
		Y20E9E0000C7	2145	050	DMP044	Active







- Vérifier le stockage
 - Les pools de disques
 - Ne pas mixer les pools
 - HDD SSD Flash
 - La sécurité disque
 - Raid 1 ou miroir
 - Raid 5 ou 6
 - Disque défectueux
 - Reconstruction







- Vérifier la configuration mémoire
 - Expert cache

System	Pool	Reserved	Max	Paging
Pool	Size (M)	Size (M)	Active	Option
1	1521.62	785.25	+++++	*FIXED
2	$\overline{1}2239.84$	6.44	193	*CALC_
3	2314.14	. 00	406	*CALC_
4	162.37	.00	5	*CALC

- Défaut de pages
 - · Si élevé, pas assez de mémoire

System	Pool	Reserved	Max	D	В
Pool	Size (M)	Size (M)	Active	Faults	Pages
1	1521.62	785.25	++++		 .
2	12239.84	6.44	193	48.1	64915.8
3	2314.14	.00	406	<u> </u>	0
4	162.37	.00	5	. 0	. 0

Event on-line 5 Nov. Comment prévenir les problèmes de performance avant qu'ils n'arrivent?







- Vérifier la configuration disques
 - Combien de disques sur la partition
 - 1, 2, 100 ?
 - Quelle taille de disque
 - 40, 80, 160, 300Gb?
 - Plus il y a de disques, mieux c'est

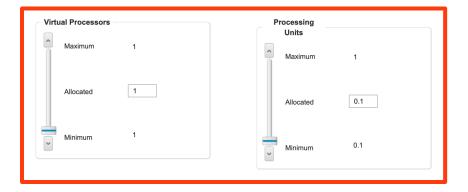
Elaps	Work with Disk Status MENARD74 11/03/20 09:00:02 CET Elapsed time: 00:00:00									
		Size	%	1/0	Request	Read	Write	Read	Write	%
Unit	Type	(G)	U <mark>sed</mark>	Rqs	Size (K)	Rqs	Rqs	(K)	(K)	Busy
1	2145	190	6 <mark>4.0</mark>	. 0	. 0	. 0	. 0	. 0	. 0	Ō
2	2145	190	6 <mark>4.0</mark>	. 0	. 0	. 0	. 0	. 0	. 0	0
3	2145	190	6 <mark>4.0</mark>	. 0	. 0	. 0	. 0	. 0	. 0	0
4	2145	190	6 <mark>4.0</mark>	. 0	. 0	. 0	. 0	. 0	. 0	0
5	2145	190	6 <mark>4.0</mark>	. 0	. 0	. 0	. 0	. 0	. 0	0
6	2145	190	63.6	. 0	. 0	. 0	. 0	. 0	. 0	0
7	2145	190	63.3	. 0	. 0	. 0	. 0	. 0	. 0	0
8	2145	190	63.3	. 0	. 0	. 0	. 0	. 0	. 0	0







- Vérifier le processeur
 - CPU dédié
 - CPU partagé
 - Bridé non bridé
 - CPU > 100 %



```
Work with System Status
                                                           11/03/20
                                 210.0
                                           Auxiliary storage:
Elapsed time . .
                                             System ASP . . . . . .
Jobs in system . .
                                   464
                                             % system ASP used
 perm addresses .
                                   .009
                                             Total
  temp addresses . . .
                                   .009
                                             Current temporary used
                                             Peak temporary used
```

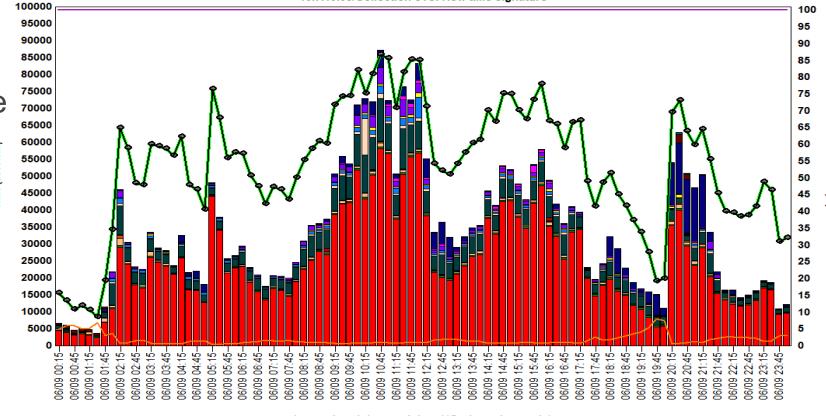






- Il calcule?
 - CPU intentif
 - Attentes
 - Pas assez de mémoire

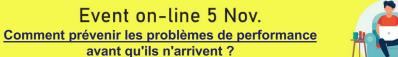




Interval end date and time (15 minute intervals)

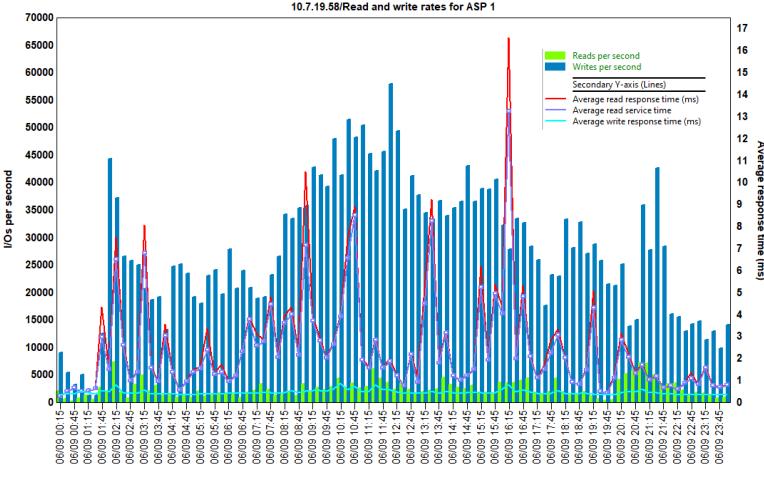






Dispatched CPU (seconds)

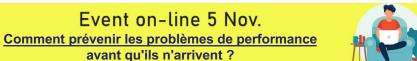
- Il écrit, il lit ?
 - Disque intensif
 - Temps de réponse élevé









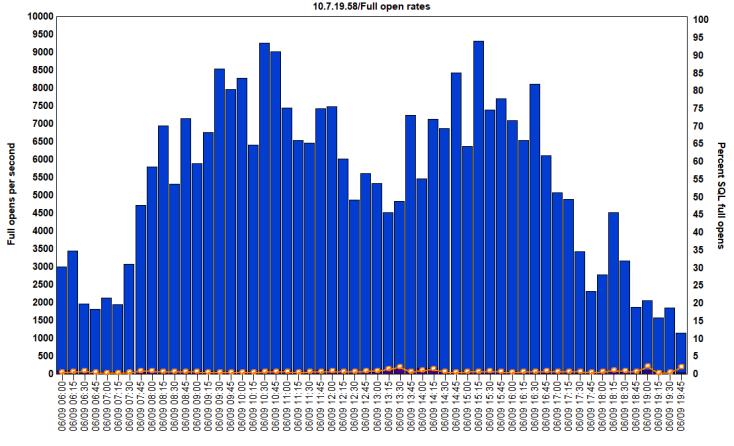


- Comment est-il écrit ?
 - Full opens
 - Réécriture d'une partie du code

SQL

COBOL

RPG



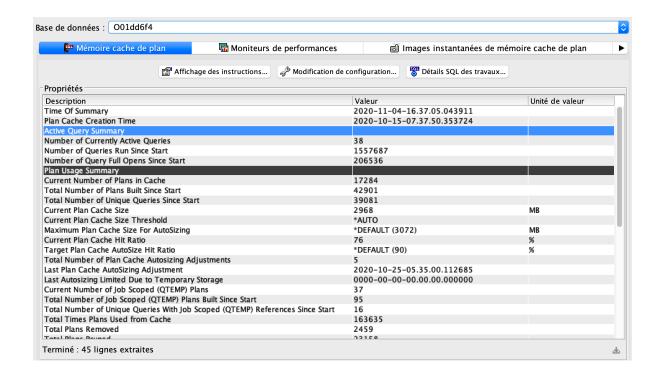
Interval end date and time (15 minute intervals)

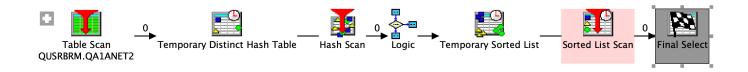






- Comment est-il écrit ?
 - Requêtes SQL
 - Plan cache
 - Visual explain
 - L'IPL vide le cache

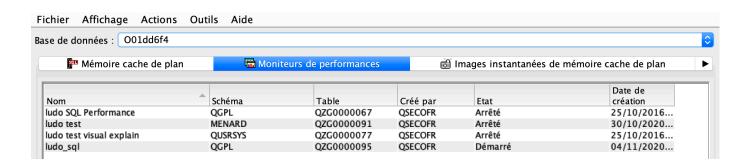








- Comment est-il écrit ?
 - Requêtes SQL
 - Plan cache
 - Visual explain
 - Index recommandé



• • • • • • • • • • • • • • • • • • •		10	do_oq. oq.	Statements - 10	7770100(00100	0.1,		
Fichier Affichage Action	s Aide							
			Statement					Variable
Start Time	End Time	Runtime	Outcome	SQLSTATE	SQLCODE	Operation	Statement Text	Values
2020-11-04 16:54:00.089018	2020-11-04 16:54:00.168653	0.079632	Successful	00000		0 QQQQRY	Non SQL Query QPFRDATA/QAPMJOBL.R309000003	-
2020-11-04 16:54:00.089018	2020-11-04 16:54:00.144628	0.055608	Successful	00000		0 QQQQRY	Non SQL Query QPFRDATA/QAPMJOBL.Q309000003	-
2020-11-04 16:54:36.303473	2020-11-04 16:54:36.328405	0.024928	Successful	00000		0 OPEN	SELECT RDNAME, RSSYSNAME, RSNETID, RSNODEPC	
2020-11-04 16:54:36.199543	2020-11-04 16:54:36.217424	0.017888	Successful	02000	1	.00 DELETE	DELETE FROM QUSRBRM.QA1ANET2 WHERE RMTSY	X'C1'
020-11-04 16:54:28.612887	2020-11-04 16:54:28.624510	0.011624	Successful	00000		0 PREPAREDES	(SELECT ?,INTNUM, DATETIME AS DATETIME, SMDA	-
2020-11-04 16:53:28.610832	2020-11-04 16:53:28.622415	0.011576	Successful	00000		0 PREPAREDES	(SELECT ?,INTNUM, DATETIME AS DATETIME, SMDA	-
2020-11-04 16:53:36.055832	2020-11-04 16:53:36.066935	0.011096	Successful	02000	1	.00 DELETE	DELETE FROM QUSRBRM.QA1ANET2 WHERE RMTSY	
2020-11-04 16:54:36.279984	2020-11-04 16:54:36.290802	0.010816	Successful	00000		0 OPEN	SELECT * FROM QUSRBRM.QA1ANET2 WHERE (OB	
2020-11-04 16:53:36.143020	2020-11-04 16:53:36.152183	0.009160	Successful	00000		0 OPEN	SELECT RDNAME, RSSYSNAME, RSNETID, RSNODEPC	
2020-11-04 16:53:36.104754	2020-11-04 16:53:36.111607	0.006848	Successful	02000	1	.00 INSERT	INSERT INTO QUSRBRM.QA1A2NET SELECT DISTINC	
2020-11-04 16:54:36.253690	2020-11-04 16:54:36.259298	0.005608	Successful	02000	1	.00 INSERT	INSERT INTO QUSRBRM.QA1A2NET SELECT DISTINC	X'E2E8D5
2020-11-04 16:54:33.317679	2020-11-04 16:54:33.321470	0.003792	Successful	00000		0 CALL	CALL QSYS2.SET MONITOR OPTION(1)	-
2020-11-04 16:53:36.128331	2020-11-04 16:53:36.131848	0.003520	Successful	00000		0 OPEN	SELECT * FROM QUSRBRM.QA1ANET2 WHERE (OB	X'E2E8D5
2020-11-04 16:53:36.085738	2020-11-04 16:53:36.089042	0.003304	Successful	02000	1	.00 DELETE	DELETE FROM QUSRBRM.QA1A2NET WITH NC	-
2020-11-04 16:53:13.623257	2020-11-04 16:53:13.626286	0.003024	Successful	00000		0 OPEN		'SYS MON
2020-11-04 16:53:43.615855	2020-11-04 16:53:43.618260	0.002408		00000		0 CLOSE	CLOSE CRSR0001	_
2020-11-04 16:54:36 251219	2020-11-04 16:54:36 253459	0.002240		00000		O PREPARE DES	INSERT INTO OUSRIRM OATAZNET SELECT DISTINC	

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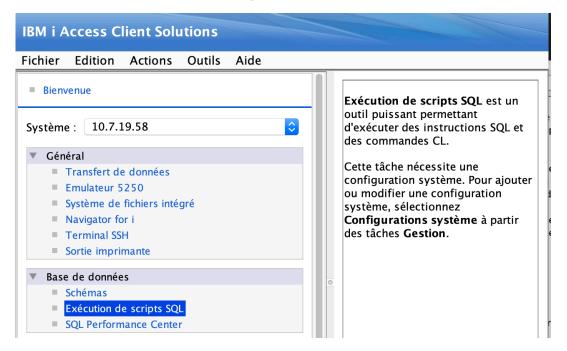
Index Statistiques							
Les index suivants ont été recommandés :							
Création	Table	Schéma	Colonnes	Type index	Séquence de tri		
<u> </u>	QA1ANET2	QUSRBRM	RMTSYS, RMTRNI, OBJ, LIB	BINARY RADIX	Néant (tri par valeur hexadécimale)		
✓	QA1ANET2	QUSRBRM	OBJ, RMTSYS, RMTRNI, LIB	BINARY RADIX	Néant (tri par valeur hexadécimale)		

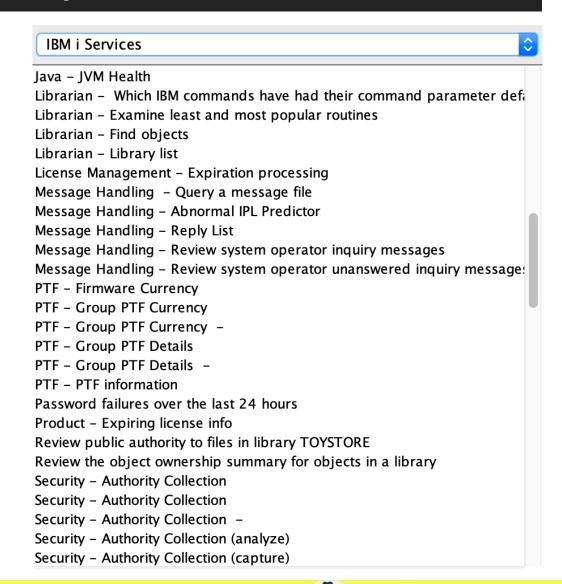






- IBM i services
 - À partir d'ACS
 - Exécution de scripts SQL









avant qu'ils n'arrivent?

IBM i services

Top des consommateurs de disques

```
1 -- category: IBM i Services
2 -- description: Storage - Top 10 consumers, by user
3
4 --
5 -- Review the top 10 storage consumers
6 SELECT A.AUTHORIZATION_NAME, SUM(A.STORAGE_USED) AS TOTAL_STORAGE_USED, B.TEXT_DESCRIPTION, B.ACCOUNTING_CODE, B.MAXIMUM_ALLOWED_STORAGE
7 FROM QSYS2.USER_STORAGE A
8 INNER JOIN QSYS2.USER_INFO B ON B.USER_NAME = A.AUTHORIZATION_NAME WHERE B.USER_NAME NOT LIKE 'Q%'
9 GROUP BY A.AUTHORIZATION_NAME, B.TEXT_DESCRIPTION, B.ACCOUNTING_CODE, B.MAXIMUM_ALLOWED_STORAGE
10 ORDER BY TOTAL_STORAGE_USED DESC FETCH FIRST 10 ROWS ONLY;
```

AUTHORIZATION_NAME	TOTAL_STORAGE_USED TEXT_DESCRIPTION	ACCOUNTING_CODE	MAXIMUM_ALLOWED_STORAGE
MENARD	17895496 Ludovic Menard Security Officer	*SYS	9223372036854775807
LALEVEE	769572 Security Officer	*SYS	9223372036854775807
BENOIT	685300 -	-	9223372036854775807
ANSIBLE	3216 User Ansible	*SYS	9223372036854775807
BONHOMMET	12 Jean-Luc Bonhommet	*SYS	9223372036854775807
DEM0	12 -	-	9223372036854775807
TEAM1	12 Create by Ansible	-	9223372036854775807







- IBM i services
 - Système à jour de PTFs
 - Liste des groupes
 - Mise à jour disponible

```
5 -- Derive the IBM i operating system level and then
6 -- determine the level of currency of PTF Groups
8 With iLevel(iVersion, iRelease) AS
10 select OS_VERSION, OS_RELEASE from sysibmadm.env_sys_info
    SELECT P.*
       FROM iLevel, systools.group_ptf_currency P
       WHERE ptf_group_release =
              'R' CONCAT iVersion CONCAT iRelease concat '0
       ORDER BY ptf_group_level_available -
 GRPCUR
                                                                               GRP_LVL GRP_IBMLVL GRP_LSTUPD GRP_RLS
                                                                                                                         GRP_SYSSTS
                             GRP ID NAME
 UPDATE AVAILABLE
                             SF99739 SF99739 740 Group Hiper
                                                                                                  37 11/03/2020 R740
                                                                                                                          INSTALLED
 UPDATE AVAILABLE
                             SF99661 SF99661 740 WebSphere App Server V8.5
                                                                                                   4 10/19/2020 R740
                                                                                                                          INSTALLED
 UPDATE AVAILABLE
                             SF99664 SF99664 740 Backup Recovery Solutions
                                                                                                  16 10/20/2020 R740
                                                                                                                          INSTALLED
 UPDATE AVAILABLE
                             SF99738 SF99738 740 Group Security
                                                                                                  13 10/20/2020 R740
                                    SF99652 740 Content Manager OnDemand for
                                                                                                   2 03/20/2020 R740
                                                                                                                          RELATED GROUP
                                     SF99653 740 Db2 Web Query for i V2.2.1
                                                                                                   9 06/22/2020 R740
                                                                                                                          RELATED GROUP
 INSTALLED LEVEL IS CURRENT SF99662
                                     SF99662 740 IBM HTTP Server for i
                                                                                                   8 09/29/2020 R740
                                                                                                                          INSTALLED
 INSTALLED LEVEL IS CURRENT SF99663 SF99663 740 Performance Tools
                                                                                                                          INSTALLED
                                                                                                   5 10/06/2020 R740
 INSTALLED LEVEL IS CURRENT SF99665
                                    SF99665 740 Java
                                                                                                   8 09/24/2020 R740
                                                                                                                          INSTALLED
                                                                                                   4 06/26/2020 R740
 INSTALLED LEVEL IS CURRENT SF99666
                                     SF99666 740 High Availability for IBM i
                                                                                                                          INSTALLED
 INSTALLED LEVEL IS CURRENT SF99667
                                     SF99667 740 740 TCP/IP PTF
                                                                                                                          INSTALLED
                                                                                                   1 05/12/2020 R740
                                                                                                                          INSTALLED
 INSTALLED LEVEL IS CURRENT SF99668
                                     SF99668 740 IBM Db2 Mirror for i
                                                                                                   7 06/23/2020 R740
 INSTALLED LEVEL IS CURRENT SF99675
                                    SF99675 740 Hardware and Related PTFs
                                                                                                   2 01/16/2020 R740
                                                                                                                          INSTALLED
 INSTALLED LEVEL IS CURRENT SF99704 SF99704 740 DB2 for IBM i
                                                                                                   9 09/17/2020 R740
                                                                                                                          INSTALLED
 INSTALLED LEVEL IS CURRENT SF99736 SF99736 740 Technology Refresh plus Reco
                                                                                                   111/14/2019 R740
                                                                                                                          INSTALLED
INSTALLED LEVEL IS CURRENT SE99737 SE99737 740 Technology Refresh
                                                                                                                          TNSTALLED.
Done: 18 rows retrieved.
                                                                                                                                11/04/2020, 01:56:01 PM 🕹
          PTF - Group PTF Currency
                                               With iLevel(iVersion, iRelease) AS ( select OS VERSION, OS RELEASE from sysibmadm.env sys info ) SEL..
```

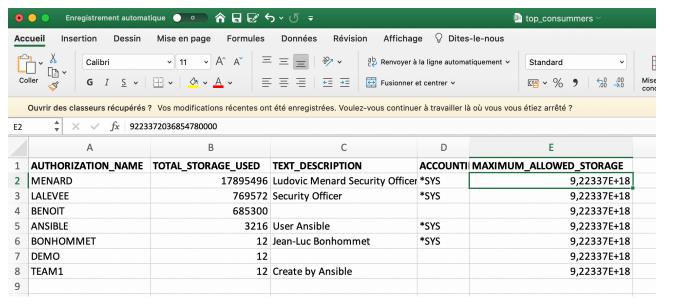






- IBM i services
 - Sauvegarde des résultats
 - Format EXCEL
 - Format TXT
 - Format ODS











Go perform

- Collecte de performance
 - intervalle : 5 10 minutes
 - Temps de la collection
 - Intervalle de cycle

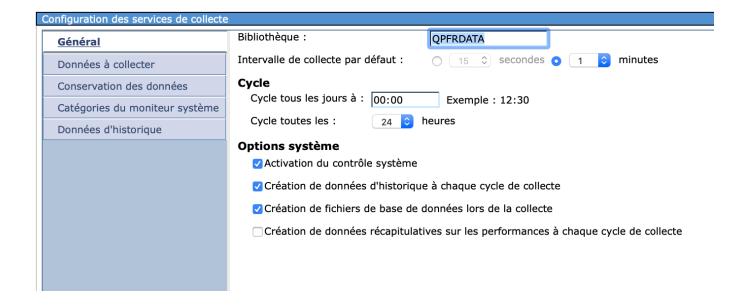
```
Collect Performance Data
                                                                      MENARD74
                                                            11/03/20
Collection Services status:
  Status . . . . . . . . . . . :
                                      Started
  Collection object . . . . . . :
                                      Q308092316
    Library . . . . . . . . . . :
                                      OPFRDATA
  Started . . . . . . . . . . . .
                                      11/03/20
                                               09:23:16
  Default collection interval . . :
                                      00:01:00
  Retention period . . . . . . :
                                      PERMANENT
                                      00:00:00
  Cycle time . . . . . . . . . :
 Cycle interval . . . . . . :
                                      24
  Collection profile . . . . . :
                                      *STANDARDP
Select one of the following:
     1. Start Performance Collection
     2. Configure Performance Collection
     3. End Performance Collection
Selection or command
F3=Exit
          F4=Prompt
                      F5=Refresh
                                   F9=Retrieve
                                                 F12=Cancel
```







- Configuration des services de collecte
 - IBM Navigator for i
 - Collecte de performance
 - intervalle : 5 10 minutes
 - Temps de la collection
 - Intervalle de cycle



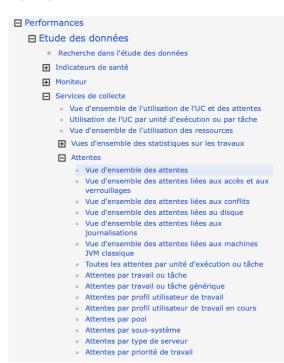


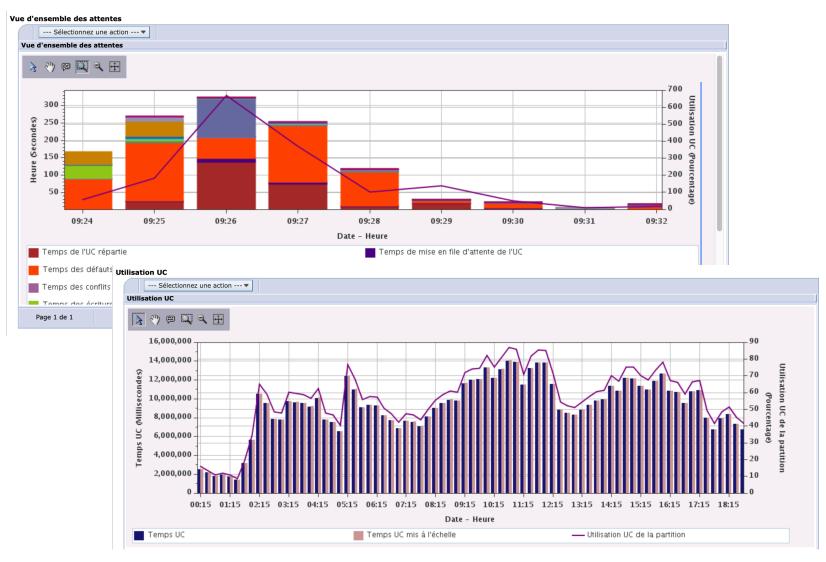




IBM Navigator for i

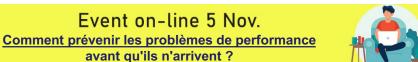
- http://adresse_IP:2001
- Gratuit







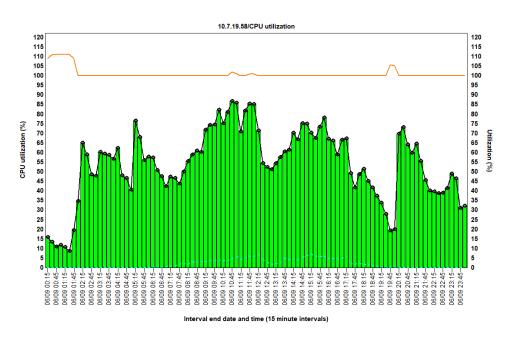


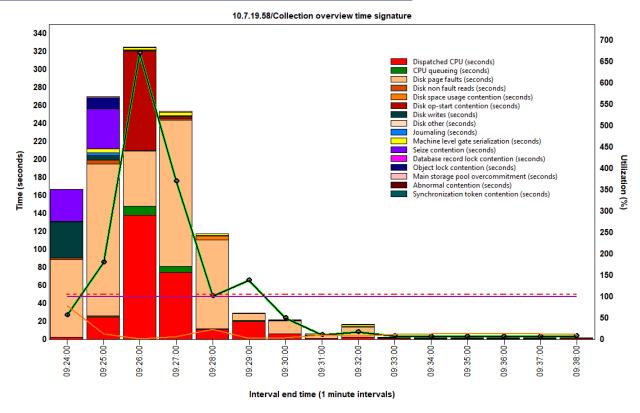


iDoctor

https://www.ibm.com/it-infrastructure/services/lab-services/idoctor

Payant





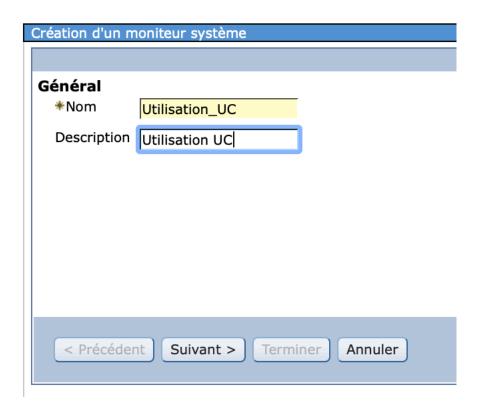






Utilisation des moniteurs

- Création d'un moniteur système
 - CPU
 - DISK
 - SQL
- Seuil d'alerte
- Ajout d'un déclencheur
 - Message
 - Programme



Event on-line 5 Nov.

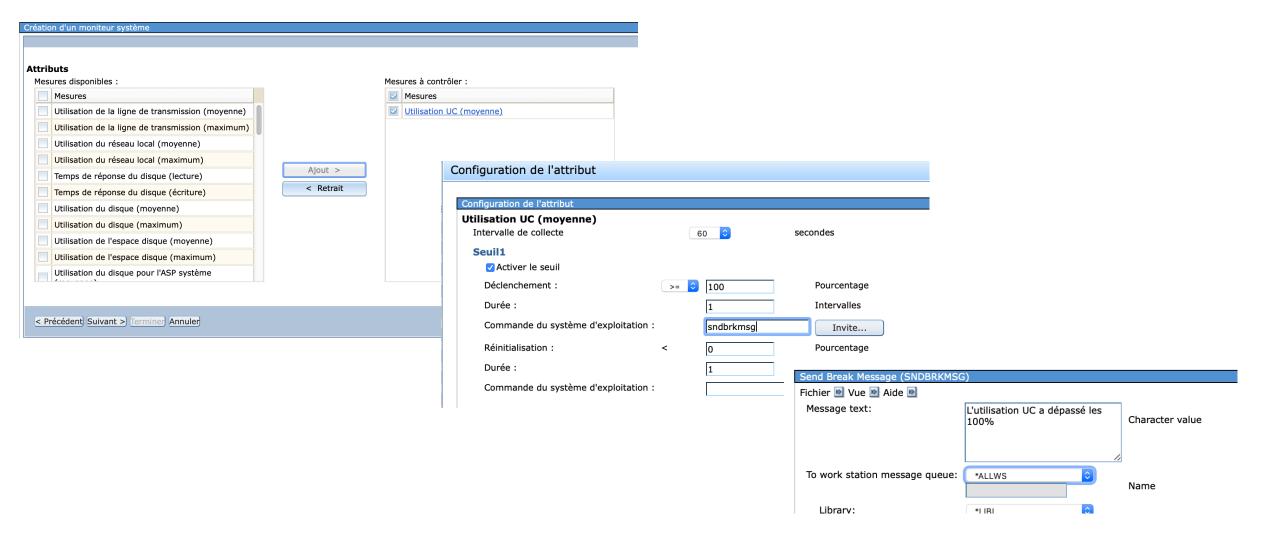
Comment prévenir les problèmes de performance avant qu'ils n'arrivent ?







<u>Utilisation des moniteurs</u>







avant qu'ils n'arrivent?

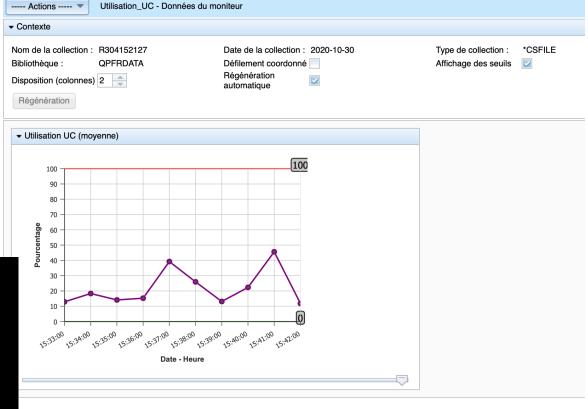
Utilisation des moniteurs

Création d'un moniteur système Récapitulatif Général Nom: Utilisation_UC Description: Utilisation UC

~	buts		
	Nom	Déclencheur1	Réinitialisation1

Utilisation UC (moyenne)	>= 100	< 0

	Display Mess	sages	System:	MENARD74
Queue : QPADEV0001 Library : QSYS		Program . Library		*DSPMSG
Severity : 00		Delivery		*NOTIFY
Type reply (if required), press	Enter.			
From : QSECOFR TEST		15:22:48		
From : QSECOFR limite atteinte des disques	10/30/20	15:23:22		
From : QSECOFR alerte disk	10/30/20	15:41:22		



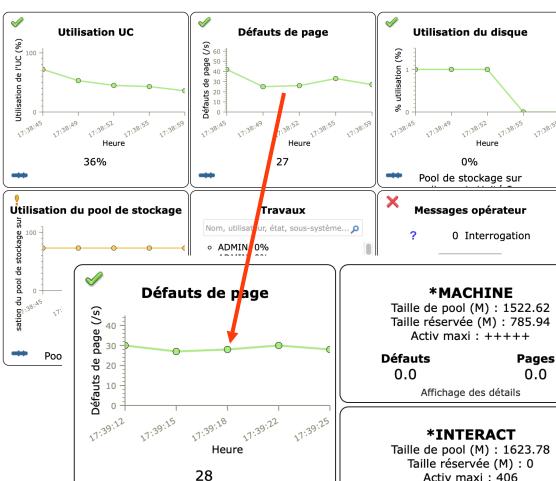


Attribute



Outils de surveillance

- IBM Navigator for i
 - Tableau de bord



*BASE

Taille de pool (M): 12929.21 Taille réservée (M): 6.85 Activ maxi: 193

Pages Défauts 27.7 122.6

Affichage des détails

Taille de pool (M): 1623.78 Taille réservée (M): 0 Activ maxi: 406

Défauts Pages 0.0 0.0

Affichage des détails

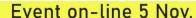
*SPOOL

Taille de pool (M): 162.37 Taille réservée (M): 0 Activ maxi: 5

Défauts Pages 0.0 0.0 Affichage des détails

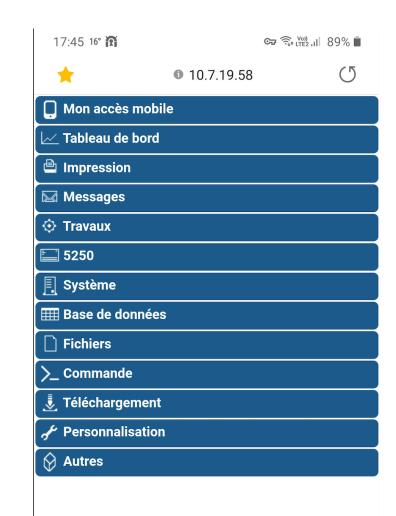


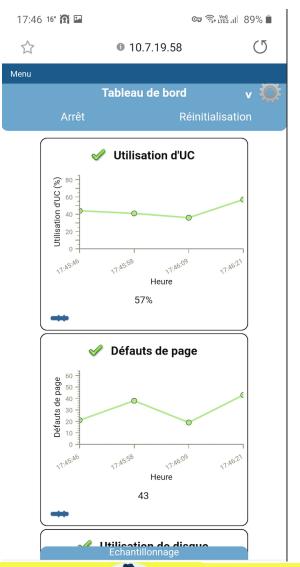




Outils de surveillance

- IBM i Access for Web
 - Produit XH2
 - Famille Client access





http://adresse_IP:2001/iamobile





Un peu de lecture

- IBM i on Power Performance FAQ
 - https://www.ibm.com/downloads/cas/QWXA9XKN
- IBM Navigator for i Performance interface
 - https://www.ibm.com/support/knowledgecenter/ssw_ibm_i_74/rzahx/rzahxwebna
 vperformance.htm
- Plan cache
 - https://www.ibm.com/support/knowledgecenter/ssw_ibm_i_73/rzajq/rzajqcache.h
 tm











Evènement On-line 5 Nov





MERC

Ludovic Ménard

Un évènement organisé par :



















