Power Week 2025

#pw2025

18 - 19 - 20 novembre 2025

IBM Innovation Studio Paris

S36 - AIX et le Zero Planned Downtime

19 novembre 11:15 - 12:15

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AIX

Déjà 39 ans

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

COMPUTERWORLD

$2 A COPY; $44/YEAR — JANUARY 27, 1986 — VOL. XX, NO. 4

Product Spotlight
MRP II software: Optimizing manufacturing/35

In Depth
A practical perspective on relational rules/61

Plan for glitches, not just disaster/67

TOP OF THE NEWS

Apple declared a truce with co-founder Steve Jobs. **Page 122.**

Maintenance backlogs at some Fortune 500 companies drag out to as long as 23 months. **Page 31.**

A call was issued last week for a user boycott of equipment manufacturers that do not sell parts to service firms. **Page 14.**

Ashton-Tate folded Multimate's site licensing option while other vendors reconsider their own licensing policies. **Page 2.**

Hewlett-Packard's first reduced instruction set computing-based system from its touted Spectrum program will be unveiled at its Feb. 25 annual shareholders' meeting, the company reportedly told market analysts recently. However, the 4 million instructions per second machine may not be delivered until the fourth quarter of this year — a major setback. The system is said to feature HP 3000 emulation mode and native RISC mode.

A low-end data base product, codenamed Black Gold, is one of four new products planned for introduction by Ashton-Tate by the second quarter of this year, sources close to the company said.

Prime Computer is discussing a business relationship with Apple, but "nothing is imminent," according to Prime spokesman Joseph Gavaghan. Prime has developed software with which the Macintosh can be linked to a Prime mini as a terminal, he said. Apple wants Prime to be a value-added reseller of the Macintosh, but Prime wants Apple to "sell Primes into installations where more horsepower is needed."

CXI, Inc. of Palo Alto, Calif., will report this week the signing of five million-dollar contracts for its line of

See **NEWS** page 6

DEC to offer powerhouse top-end VAX

By James Connolly

MAYNARD, Mass. — Digital Equipment Corp., which only seven weeks ago announced its high-end VAX 8650 supermini-computer, Wednesday is expected to unveil a mainframe-class system code-named Nautilus, several sources told *Computerworld* last week.

Nautilus, to be known as the VAX 8800, will displace the 8650 and its predecessor, the VAX 8600, at the top of DEC's product line. DEC will continue to produce the 8600, 1,000 of which have been installed, and the 8650, which DEC has promised to deliver by early March.

DEC officials declined comment on the speculation surrounding the announce-

See **DEC** page 6

AT&T cuts loss, axes Net 1000

By Elisabeth Horwitt

After spending approximately 10 years and $1 billion trying to make Net 1000 profitable, AT&T has pulled the plug on the value-added packet-switched network. The service will be terminated by June 1 for existing customers.

The choice was "a prudent business decision," according to AT&T spokesman Barry Campbell. "Net 1000 just wasn't meeting our corporate profit objectives."

Campbell debunked one current industry theory that Net 1000's demise resulted from regulatory clashes with the Federal Communications Commission. He said it failed "because a market just never devel-

See **AT&T** page 4

IBM unveils RISC system

RT PC 32-bit workstation runs under Unix version

By Charles Babcock

NEW YORK — Seeking a hold on yet another fast-growth market, IBM last week unveiled its first 32-bit workstation, the RT Personal Computer. Shunning standard components that competitors have adopted, IBM's system is built around proprietary reduced instruction set computing technology and offers optional compatibility with the IBM Personal Computer AT.

System/36 boosted, page 12; DP RISC potential debated, page 15.

The multiuser system uses an expanded version of AT&T Unix System V but provides limited mainframe communications capabilities and lacks an IBM Token-Ring network connection.

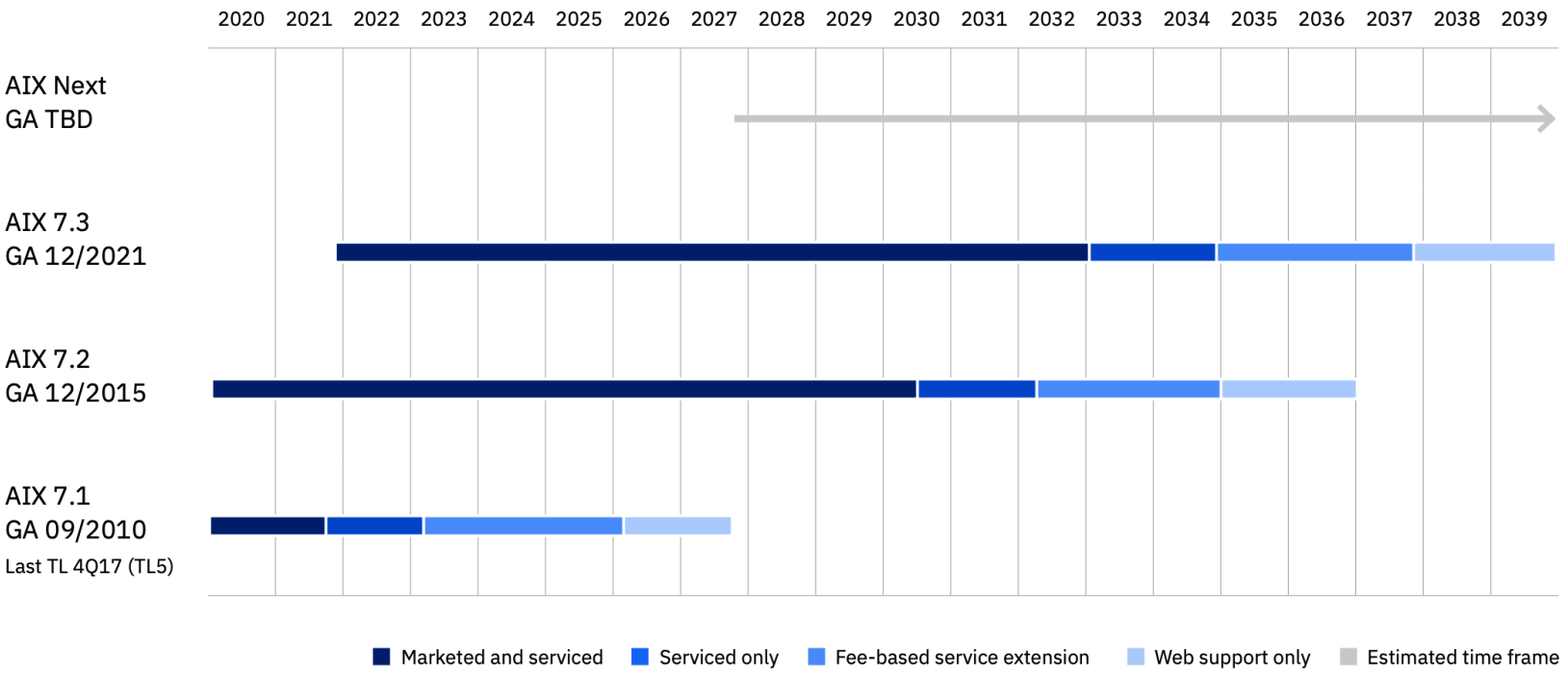
IBM expects the RT PC line, priced from $16,485 in a typical base configuration, to compete with other 32-bit workstations in the engineering and computer-aided design and manufacturing markets and to become a multitasking network machine in small businesses and corporate departments, said Robert M. Williams, general manager of IBM's Engineering Systems Products, during the Tuesday announcement in New York.

The long-expected product received mixed reviews. Workstation vendors such as Apollo Computer, Inc. and Sun Microsystems, Inc. said the IBM product does not offer any price or performance challenge (see related story page 9). But some analysts viewed the announcement as a strategic thrust that could dramatically affect the workstation market.

The machine's operating system, Advanced Interactive Executive, was devel-

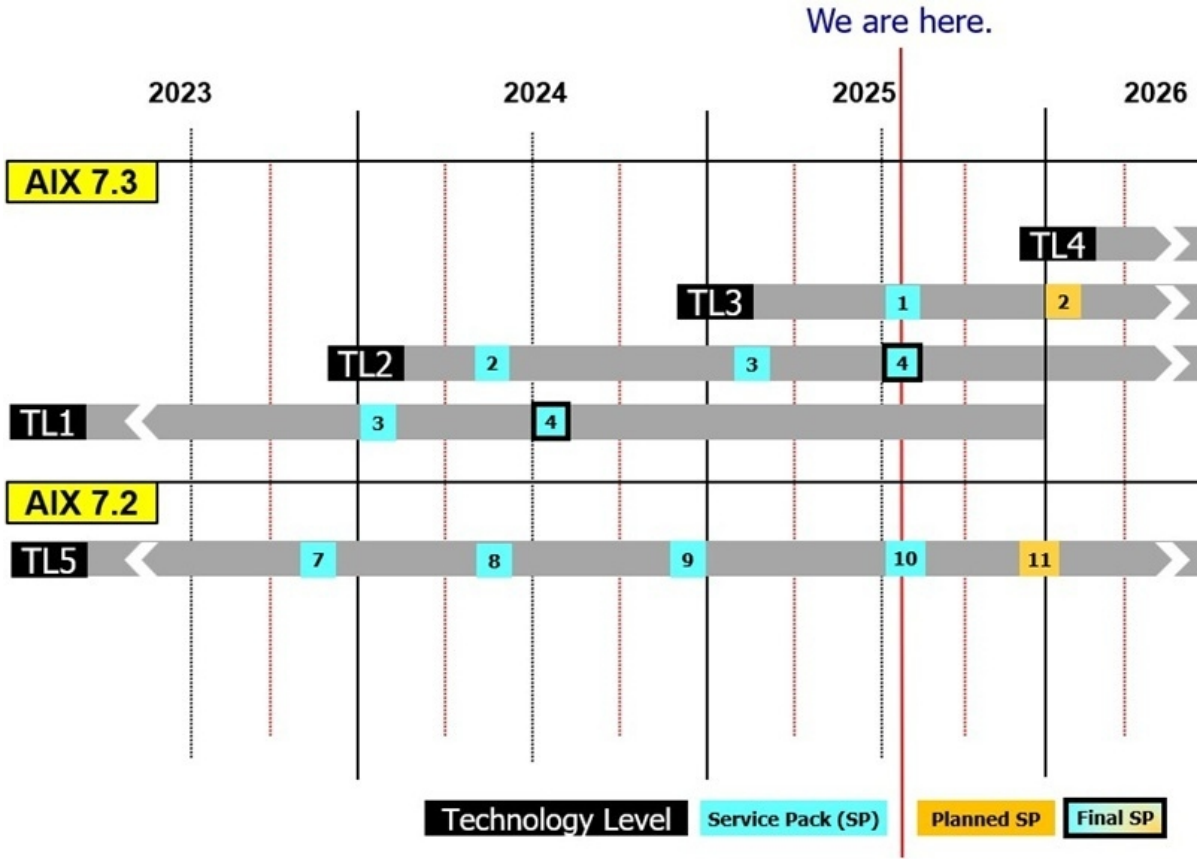
See **IBM** page 8

Jusqu’en 2039



https://www.ibm.com/downloads/documents/us-en/107a02e95ac8f5cc

Versions supportées



Dates de fin de support

https://www.ibm.com/support/pages/aix-support-lifecycle-information

AIX 7.3

TL	Release Date	End of Fix Support	Latest SP	Next SP
AIX 7.3 TL3	December 2024	31 December 2027	7300-03-01-2520	February 2026
AIX 7.3 TL2	November 2023	30 November 2026	7300-02-04-2520	None
AIX 7.3 TL1	December 2022	31 December 2025	7300-01-04-2420	None
AIX 7.3 TL0	December 2021	31 December 2024	7300-00-04-2320	None

AIX 7.2

TL	Release Date	End of Fix Support	Latest SP	Next SP
AIX 7.2 TL5	November 2020	To be determined	7200-05-10-2520	5 December 2025
AIX 7.2 TL4	November 2019	30 November 2022	7200-04-06-2220	None
AIX 7.2 TL3	September 2018	30 September 2021	7200-03-07-2114	None
AIX 7.2 TL2	October 2017	31 October 2020	7200-02-06-2016	None
AIX 7.2 TL1	November 2016	30 November 2019	7200-01-06-1914	None
AIX 7.2 TL0	December 2015	31 December 2018	7200-00-06-1806	None

AIX 7.1

TL	Release Date	End of Fix Support	Latest SP	Next SP
AIX 7.1 TL5	October 2017	30 April 2023 (EOS)	7100-05-12-2320	None

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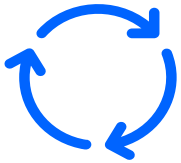
Zero Planned Downtime

Deux types d’évènements dans la vie d’un SI



Planifiés

Non planifiés

- Evolution matérielle
- Réparation / remplacement matériel ou logiciel
- Mise à jour ou montée de version logicielle
- Sauvegarde (à froid)
- Tests (tests réguliers requis pour valider un cluster)
- Développement

Principales opérations de maintenance sur AIX

- Mise à jour AIX (TL/SP) → 2x / an
- Patches spécifiques (bugs, incidents) → plusieurs / an
- Mises à jour critiques (CVE) → en fonction du besoin
  (Common Vulnerabilities and Exposures)

Reboot required

Impact sur l[illegible]d Downtime

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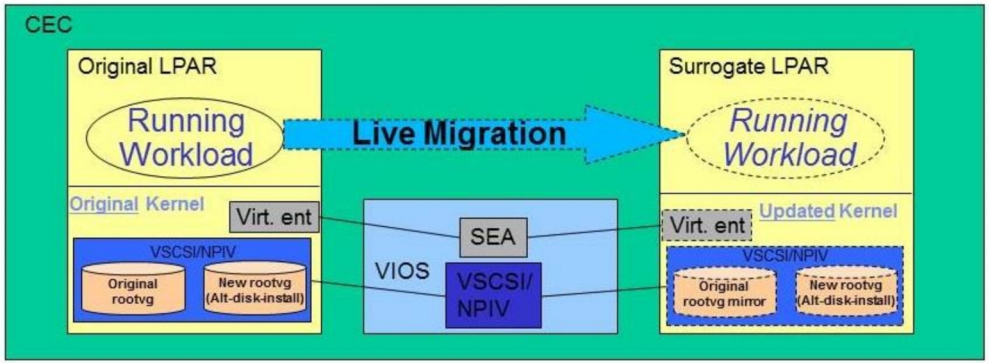
Live Kernel Update

LKU c’est quoi ?

- La capacité de mettre à jour le noyau AIX d’une partition sans impacter les applications actives sur cette partition : **sans redémarrer la partition**

- Une nouvelle partition (**surrogate** = de remplacement) est créée avec le nouveau noyau et l’activité est déplacée vers cette partition (comme un LPM).



- A la fin du processus, la partition de remplacement est conservée et la **partition initiale** est **supprimée**.

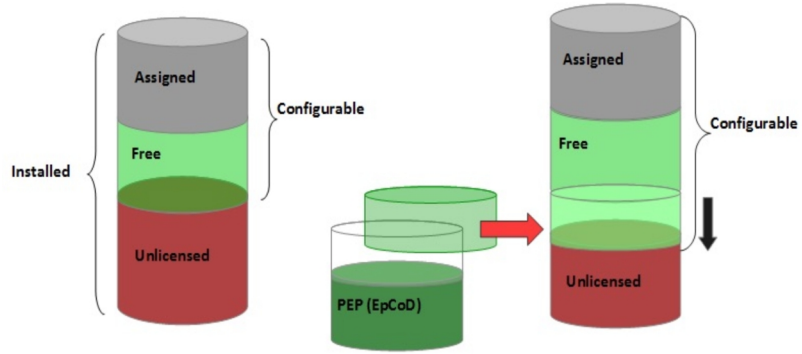
LKU, 10 ans déjà !!!

AIX 7.2 TL0 (2015):
Introduction of AIX Live Update

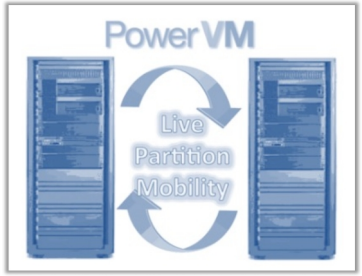
- Apply an ifix without a to reboot

Améliorations de LKU

- LKU avec Power Enterprise Pools
  - Activation automatique de ressources CPU et mémoire pour la partition surrogate
  - Activation uniquement si ressources non configurées suffisantes
  - Pool doit être “compliant”
  - Nombre total de ressources activées doit être inférieur à 2x le nombre de ressources activées sur le serveur
  - Ressources libérées après suppression de la partition originale

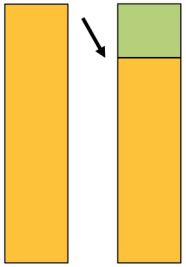


- LKU sur plusieurs serveurs Power
  - Possibilité de déplacer une partition durant le process LKU
  - Partition surrogate créée sur un autre serveur Power
  - **Uniquement** avec PowerVC

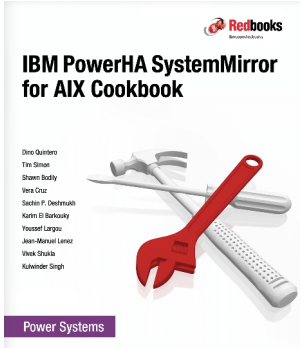


Améliorations de LKU

- La réduction de la configuration CPU avec LKU
  - Possibilité de réduire la taille de la partition surrogate si pas suffisamment de ressources CPU sur le serveur Power
  - CPU réduite à la valeur minimum
  - Pas de modification du nombre de VP



- LKU en environnement PowerHA
  - LKU prend en charge les opérations sur les clusters PowerHA
  - LKU possible sur un noeud du cluster à la fois
  - Passage du noeud en mode unmanaged
  - Redémarrage des services PowerHA à la fin des opérations LKU



Dernières évolutions LKU

- **AIX 7.3 TL3 (2024)**
  - Améliorations des performances globales : le temps d'indisponibilité de LKU, lors de la suspension d'applications, est réduit pour les environnements de travail avec une quantité importante de mémoire partagée System V.

Metric	AIX 7.3 TL1 SP2	AIX 7.3 TL3 SP1	Improvement
Live Update Time	65.06 minutes	29.20 minutes	~55% faster
Blackout Time	144.98 seconds	35.78 seconds	~75% faster

  - AIX IPSEC est désormais compatible avec AIX LKU.
  - AIX LKU permet d'augmenter la mémoire maximale et le nombre de cœurs maximum autorisée d'une partition sans redémarrage. Cette opération nécessite la modification du profil HMC avant l'exécution de l'opération LKU.
- AIX 7.3 TL3 permet la mise à jour sans redémarrage des bibliothèques AIX telles que libc (LLU).

Comment utiliser LKU ?

- Quelles partitions ?
  - **Uniquement** en AIX 7.2 TL0 et supérieur
  - Totalement virtualisées (même contrainte que LPM)
  - VIO non éligibles au LKU

- 3 moyens de lancer un LKU
  - Directement sur la partition avec la commande **geninstall** et l'option **–k**
  - Avec un serveur NIM
  - Avec un serveur PowerVC

- 2 méthodes
  - Mise à jour manuelle de la partition ou via NIM et validation des installations. **LKU pour mettre à jour le noyau AIX**
  - Mise à jour et LKU dans une seule opération sur la partition ou via NIM

Prérequis

Partition gérée par une HMC

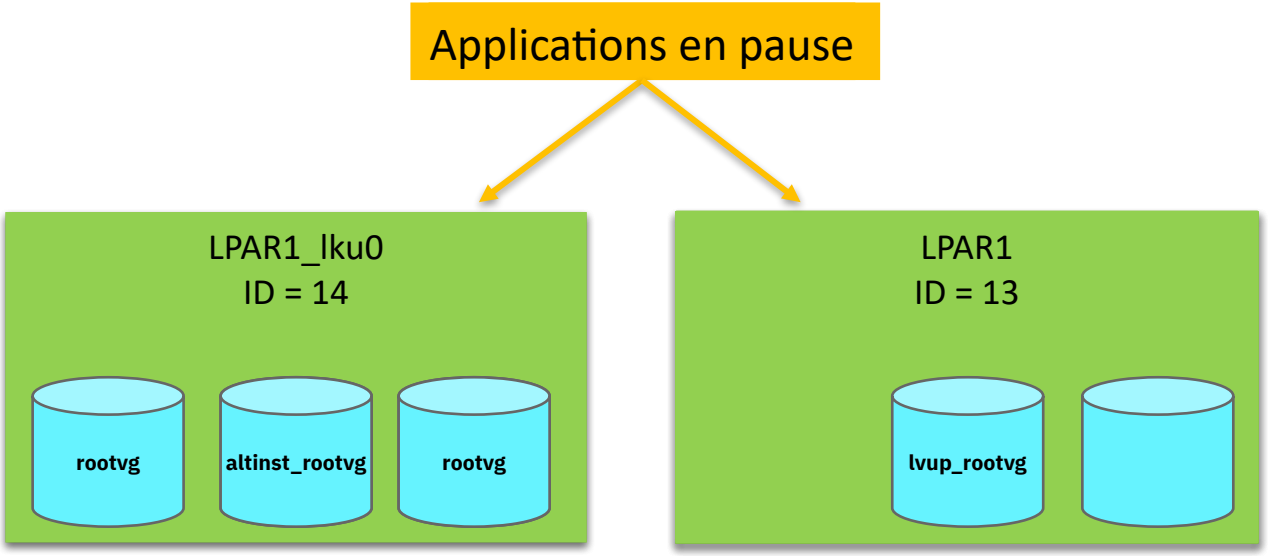
- System firmware
  - Ax730_066 (Limitation: It does not allow PowerVC to seamlessly manage the updated LPAR)
  - Ax740_043 (Limitation: It does not allow PowerVC to seamlessly manage the updated LPAR)
  - Ax770_063
  - Ax773_056
  - Ax780_056
- Hardware Management Console (HMC)
  - 840
- Virtual I/O Server
  - 2.2.3.50
- RSCT (if required)
  - 3.2.1.0
- PowerHA® (if required)
  - 7.2.0
- PowerSC (if required)
  - 1.1.4.0
- Subsystem Device Driver Path Control Module (SDDPCM) (if required)
  - 2.6.7.0

Partition gérée par PowerVC

- System firmware
  - Ax770_063
  - Ax773_056
  - Ax780_056
  - Ax840
  - Ax860
- Hardware Management Console (HMC - Either HMC or NovaLink is required when PowerVC is used)
  - 860 SP2
  - 870
  - 910
- IBM® Power® Virtualization Center (PowerVC)
  - 1.3.3.1
- NovaLink (Either NovaLink or HMC is required when PowerVC is used)
  - 1.0.0.6
- Virtual I/O Server
  - 2.2.6.0
- RSCT (if required)
  - 3.2.3.0
- PowerHA (if required)
  - 7.2.0
- PowerSC (if required)
  - 1.1.4.0
- Subsystem Device Driver Path Control Module (SDDPCM) (if required)
  - 2.6.7.0

https://www.ibm.com/docs/en/aix/7.3.0?topic=planning-prerequisites

Principales étapes



1. Création de la partition SURROGATE (_lku0)
2. Renommage des deux partitions
3. Création de l'alternate rootvg
4. Assignation de l'alternate rootvg à la partition cible
5. Démarrage de la partition cible
6. Miroir de rootvg de la partition source
7. Split du miroir rootvg et assignation de la première copie à la partition cible
8. Synchronisation de la partition cible
9. Renommage de alternate rootvg
10. Assignation de la deuxième copie de rootvg à la partition cible
11. Suppression du VG de la deuxième copie de rootvg
12. Suppression de la partition source

Préparation

- Disques supplémentaires de la taille de rootvg assignés à la partition

Obligatoires

```
#   nhdisk = <disk1,disk2,...>  The names of disks to be used to make a copy
#     of the original rootvg which will be used to boot the Surrogate
#     (surr-boot-rootvg). The required size needs to match the total size
#     of the original rootvg logical volumes except for an unmounted jfs2
#     logical volume which is not included in the required size calculation.
#     (If previewing, size checking will be performed.)
#   mhdisk = <disk1,disk2,...>  The names of disks to be used to temporarily
#     mirror rootvg on the Original LPAR.  The mirror will be split, with
#     the original rootvg moved to the Surrogate LPAR and the newly created
#     mirror staying on the Original LPAR.  After the live update, the mhdisk
#     disk(s) will be available for re-use.  If previewing, size checking will
#     be performed.
#   alt_nhdisk = <disk1,disk2,...>   The names of disks to be used if the disks
#     specified for the nhdisk attribute are not currently available
#     to be used by Live Update. The capacity requirements are
#     the same as nhdisk. Useful for doing multiple Live Updates.
#   tohdisk = <disk1,disk2,...>  The names of disks to be used as temporary
#     storage for the Original. This is only required if the Original
#     is using paging space or dump devices on non-rootvg volume groups. The
#     capacity needs to match the total capacity of paging spaces and dump
#     devices defined on non-rootvg volume groups for the original
#     partition. (If previewing, size checking will be performed.)
#   tshdisk = <disk1,disk2,...>  The names of disks to be used as temporary
#     storage for the Surrogate. This is only required if the Original is
#     using paging space or dump devices on non-rootvg volume groups. It
#     must have the same capacity as tohdisk. (If previewing, size checking
#     will be performed.)
```

Préparation (suite)

- Assignation de deux disques supplémentaires

```
[ sdaix73smui : / ] # lspv
hdisk0          00fa00d6b552f41b                    rootvg          active
hdisk1          00f93bec81a44775                    None
hdisk2          00f93bec81a4489c                    None
```

- Authentification avec la HMC

```
[ sdaix73smui : / ] # hmcauth
[Enter HMC URI: vhmcx86-1
[Enter HMC user name: sdesnoes
[Enter HMC password:
[ sdaix73smui : / ] # hmcauth -l
Address  : 9.23.99.10
User name: sdesnoes
Port     : 12443
```

- Pour LKU **sans PowerVC**: créer le fichier /var/adm/ras/liveupdate/lvupdate.data à partir du template lvupdate.template
  - nhdisk
  - mhdisk
  - lpar_id
  - management_console
  - user

```
[ sdaix73smui : / ] # tail -14 /var/adm/ras/liveupdate/lvupdate.data
general:
        kext_check =
        disable_wallmsg = yes

disks:
        nhdisk  = hdisk1
        mhdisk  = hdisk2
        tohdisk =
        tshdisk =

hmc:
        lpar_id  = 13
        management_console = vhmcx86-1
        user = sdesnoes
```

Etapes d’un LKU

```
[ sdaix73smui : / # geninstall -k                                              ]

+-------------------------------------------------------------------------------+
                    Pre-Live Update Verification...
+-------------------------------------------------------------------------------+

11/14/2025-11:02:42     Verifying environment...
11/14/2025-11:02:42     Verifying /var/adm/ras/liveupdate/lvupdate.data file...
11/14/2025-11:02:46     Computing the estimated time for the live update operation...Results...

EXECUTION INFORMATION
---------------------
  LPAR: sdaix73smui
  HMC: 9.23.99.10
  user: sdesnoes

  Estimated blackout time(in seconds): 19
  Estimated total operation time(in seconds): 600

  << End of Information Section >>

+-------------------------------------------------------------------------------+
                    Live Update Requirement Verification...
+-------------------------------------------------------------------------------+

INFORMATION
-----------
INFO: Any system dumps present in the current dump logical volumes will not be available after live
 update is complete.

  << End of Information Section >>
```

```
+-------------------------------------------------------------------------------+
                    Live Update Preview Summary...
+-------------------------------------------------------------------------------+

11/14/2025-11:03:14     The live update preview succeeded.

Non-interruptable live update operation begins in 10 seconds.

11/14/2025-11:03:24     Live AIX update is starting.

11/14/2025-11:03:35     Initializing live update on original LPAR.

11/14/2025-11:03:35     Validating original LPAR environment.

11/14/2025-11:03:35     Beginning live update operation on original LPAR.

11/14/2025-11:03:45     Requesting resources required for live update.

11/14/2025-11:05:25     Notifying applications of impending live update.

11/14/2025-11:05:45     Creating rootvg for boot of surrogate.

11/14/2025-11:05:45     Starting alt_disk_copy.

11/14/2025-11:09:05     Completed alt_disk_copy.

11/14/2025-11:09:05     Rootvg for the surrogate is ready.

11/14/2025-11:09:05     Starting the surrogate LPAR.

11/14/2025-11:09:05     Surrogate AIX boot started.

11/14/2025-11:10:25     Surrogate AIX reboot started.

11/14/2025-11:11:35     Surrogate LPAR AIX is running.

11/14/2025-11:11:35     Creating mirror of original LPAR's rootvg.

11/14/2025-11:12:15     Original rootvg mirror is active.

11/14/2025-11:12:15     Moving workload to surrogate LPAR.

11/14/2025-11:12:49             Blackout Time started.

11/14/2025-11:13:14             Blackout Time end.

11/14/2025-11:13:14     Workload is running on surrogate LPAR.

11/14/2025-11:13:14     Completing transfer of system resources from the original to the surrogate
LPAR.

11/14/2025-11:13:54     Starting cleanup of the original LPAR.

11/14/2025-11:14:35     Shutting down the Original LPAR.

11/14/2025-11:14:45     Deleting the original LPAR.

11/14/2025-11:15:55     Live AIX update completed in 0h 12m 31s.

File /etc/inittab has been modified.

One or more of the files listed in /etc/check_config.files have changed.
        See /var/adm/ras/config.diff for details.
```

LKU sur AIX 7.3

```
sdaix73smui : / # lspv
hdisk0          00fa00d6b552f41b                    rootvg          active
hdisk1          00f93bec81a44775                    None
hdisk2          00f93bec81a4489c                    None
```

Partition name	State	ID	IP address
sdaix73smui	Running	14	9.23.98.16

Partition name	State	ID	IP address
sdaix73smui	Not activated	13	
sdaix73smui_lku0	Running	14	9.23.98.16

```
sdaix73smui : / # lspv
hdisk0          00fa00d6b552f41b                    rootvg          active
hdisk1          00f93bec81a44775                    altinst_rootvg  active
hdisk2          00f93bec81a4489c                    None
```

Partition name	State	ID	IP address
sdaix73smui	Running	13	
sdaix73smui_lku0	Running	14	9.23.98.16

```
sdaix73smui : / # lspv
hdisk0          00fa00d6b552f41b                    rootvg          active
hdisk1          00f93bec81a44775                    None
hdisk2          00f93bec81a4489c                    rootvg          active
```

Partition name	State	ID	IP address	Attention LED	Reference code
sdaix73smui	Running	13		LED off	000e
sdaix73smui_lku0	Running	14	9.23.98.16	LED off	000e

Partition name	State	ID	IP address
sdaix73smui	Running	13	9.23.98.16
sdaix73smui_lku0	Not activated	14	9.23.98.16

```
sdaix73smui : / # lspv
hdisk0          00fa00d6b552f41b                    rootvg          active
hdisk1          00f93bec81a44775                    lvup_rootvg
hdisk2          00f93bec81a4489c                    None
```

Partition name	State	ID	IP address
sdaix73smui	Running	13	9.23.98.16

```
sdaix73smui : / # errpt | grep -v hdisk
IDENTIFIER TIMESTAMP  T C RESOURCE_NAME  DESCRIPTION
12295E0B   1114111525 I S LVUPDATE       Live AIX update completed successfully
9DBCFDEE   1114111325 T O errdemon       ERROR LOGGING TURNED ON
9A74C7AB   1114110225 I S LVUPDATE       Live AIX update started
```

Références

- AIX 7.3 LKU
  - https://www.ibm.com/docs/en/aix/7.3.0?topic=updates-live-update
- AIX support lifecycle information
  - https://www.ibm.com/support/pages/aix-support-lifecycle-information
- AIX System maps
  - https://www.ibm.com/support/pages/system-aix-maps
- AIX Service Strategy and Best Practices
  - https://www.ibm.com/support/pages/aix-service-strategy-and-best-practices
- AIX LKU & PowerHA System Mirror
  - https://www.ibm.com/docs/en/powerha-aix/7.2.x?topic=networks-aix-live-update-powerha-systemmirror-nodes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