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Agenda

Kernel of the Application Server ABAP
- Release Strategy
- Delivery

Maintenance Strategy
- Kernel Patch Types
- Recommendations
- Documentation

Questions and Answers
Kernel of the Application Server ABAP

SAP Kernel
Kernel of the Application Server ABAP

- separate layer
- interface between ABAP programs and operating system/database
- operates system processes of the ABAP instance
- implemented in C/C++
SAP Products in Maintenance

SAP Business Suite 6.0

- EhP ≤ 6
- EhP 7-8

SAP S/4HANA

- 1511-1710 (NW)
- 1809+ (AP)

Kernel Code Lines
### SAP Business Suite 6.0 EhP ≤ 6

**Kernel 72x**

<table>
<thead>
<tr>
<th>NW 7.0</th>
<th>NW 7.01</th>
<th>NW 7.02</th>
<th>NW 7.31</th>
</tr>
</thead>
</table>

#### SAP Business Suite 6.0

(EhP ≤ 6)

- **Kernel 722**
  - (Standard, EXT, EX2)
- **Kernel 721**
  - out of maintenance
  - supports 32-bit systems

- **No new features, corrections only**
- **EX2 (ABAP stack only), EXT:**
  - kernel versions supporting more recent OS and DB platforms, newer compilers and runtime environments
- **Unicode / non-Unicode**
- **Roadmap:** [SAP Note 1744209](https://support.sap.com/notes/1744209) (SAP Kernel 720, 721 and 722: Versions and Kernel Patch Levels)
### SAP Business Suite 6.0 EhP 7-8, SAP S/4HANA 1511-1710
#### Kernel 74x-75x

<table>
<thead>
<tr>
<th>SAP Business Suite 6.0</th>
<th>SAP S/4HANA</th>
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<tbody>
<tr>
<td>EhP 7</td>
<td>EhP 8</td>
<td>1511 1610 1710</td>
</tr>
<tr>
<td>NW 7.4</td>
<td>NW 7.5</td>
<td>7.51 7.52</td>
</tr>
</tbody>
</table>

- **Kernel 753** (Innovation)
- **Kernel 749** (Standard) _

- **Innovation:** corrections and new features
- **Standard:** no new features, corrections only
- **Unicode / non-Unicode**
- **Roadmap:** SAP Note [1969546](https://support.sap.com/notes) (Release Roadmap for Kernel 74x and 75x)
### SAP S/4HANA 1809-1909

**Kernel 77x**

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<thead>
<tr>
<th>SAP S/4HANA</th>
<th>1809</th>
<th>1909</th>
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<tbody>
<tr>
<td>ABAP Platform</td>
<td>1809</td>
<td>ABAP Platform</td>
</tr>
<tr>
<td>SAP BASIS 7.53</td>
<td>SAP BASIS 7.54</td>
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</tbody>
</table>

**Kernel 777**

- Kernel 773: out of maintenance
- _: not applicable

- **Unicode only**
- **Supported platforms:** Windows, Linux, AIX, Linux on Power
- **Roadmap:** [SAP Note 2907361](https://support.sap.com-note-2907361) (Release Roadmap for Kernel 77x and 78x)
### SAP S/4HANA 2020+

**Kernel 78x**

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>2020</td>
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</tr>
<tr>
<td>ABAP Platform 2020</td>
<td>ABAP Platform 2021</td>
</tr>
<tr>
<td>SAP BASIS 7.55</td>
<td>SAP BASIS 7.56</td>
</tr>
</tbody>
</table>

*New:* Kernel 785

- Unicode only
- Supported platforms: Windows, Linux, AIX, Linux on Power
- **Roadmap:** [SAP Note 2907361](https://support.sap.com/notes?note=2907361) (Release Roadmap for Kernel 77x and 78x)
- **SAP S/4HANA 2021** next planned on premise version, RtC: Q4 2021
Downward Compatible Kernel (DCK)

SAP products can be used with a newer DCK kernel. **Patches** are produced only for **in maintenance** kernels.

**DCK Note 2556153**
(Using Kernel 7.53 instead of Kernel 7.40, 7.41, 7.42, 7.45, or 7.49)
News 2021

SAP Business Suite 6.0 EhP ≤ 6

Kernel 722 – DCK
Kernel 721
OOM since June 2021

SAP S/4HANA 1809

Kernel 777 – DCK
Kernel 773
OOM since April 2021

Kernel 781, 785 cannot be used as a DCK kernel with SAP S/4HANA 1809-1909

SAP Note 2083594 (SAP Kernel Versions and SAP Kernel Patch Levels)
**Kernel of the Application Server ABAP**

- **Application Layer AS ABAP**
  - ABAP Central Services Instance (ASCS)
    - Start Service
      - Message Server
      - Enqueue Server
  - ABAP Instance
    - ICM
    - Dispatcher
    - RFC Gateway
      - Work Process
        - Task Handler
        - Dynpro Processor
        - ABAP VM
          - **Business Logic**
        - Database Interface
      - Shared Memory Sessions
  - Database Layer
  - Database

**Operating System**
SAP Kernel in the File System

**SAPEXE.SAR**
- disp + work
  - dw_xml
  - ......
- gwrda
- icman

**SAPEXEDB.SAR**
- R3load
- dbsdbslib
- instancedb
- sapdbrmfc
- ......

- Message Server
- Enqueue Server
- Web Dispatcher
- SAP GUI for HTML
- ......

- Kernel Utilities
- Transport Control Program
- Unicode Libraries
- SAPFTP
- ......
Delivery of Kernel Software

**SP Stack Kernel**
- SAPEXE.SAR and SAPEXEDB.SAR
- 1-2 times a year
- patch level 100, 200, 300, …
- on demand: SP Stack Kernel patches x01, x02,…

**Hotfixes**
- disp+work: weekly
- further archives on demand: lib_dbsl.SAR, dw_utils.SAR, …
- patch level 1, 2, 3 … 110, 111, 112 … 210, 211, 212 …

<table>
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<th>Example</th>
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</table>

Delivery of Kernel Software
Kernel Patches are cumulative

The latest available patch contains all previously released corrections.

... 710 711 712

You can download:
- (only) the latest hotfix archives
- (all) previously released SP Stack Kernels
  – earlier versions for maintenance purposes only

SAP Note 19466
(Downloading SAP kernel patches)
# SP Stack Kernel Plan 2021

Disclaimer: approximate dates, adjustments possible

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SAP Note [2083594](SAP Kernel Versions and SAP Kernel Patch Levels)
## SP Stack Kernel 2022

Disclaimer: approximate dates, adjustments possible

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</table>
Outlook
Disclaimer: tentative information, adjustments possible

SAP Business Suite 6.0 EhP 7-8, SAP S/4HANA 1511-1710:

- DCK Kernel 749
  EOM: 31.12.2022

- DCK Kernel 753
  EOM: 31.12.2025

- New DCK Kernel 754

EOM: 31.12.2025
Recommendation for Your SAP Application

SAP kernel maintenance strategy follows general recommendations for SAP applications.

Follow the link:
SAP Support Package Stack Strategy

Most customers perform a planned maintenance for each productively used SAP application between once and four times a year. This usually affects all components of the given SAP application.

See also
SAP NetWeaver 7.5 Maintenance Strategy
White Paper – Updated in 2021

SAP Kernel Maintenance Strategy in On Premise Landscapes

SAP kernel: function, releases, components, maintenance strategy, …

20 pages

(basis for many parts of today's talk)

Follow the link:
Kernel Patch Types
## Kernel Patch Types and Their Purpose

### Kernel Patch Type

<table>
<thead>
<tr>
<th>SP Stack Kernel</th>
<th>Hotfix</th>
<th>Emergency SP Stack Kernel</th>
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<tbody>
<tr>
<td>Recommended Use</td>
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<td>all customer installations &quot;large-scale&quot;</td>
<td>troubleshooting &quot;sporadically&quot;</td>
<td>troubleshooting in SP Stack Kernel &quot;sporadically&quot;</td>
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<tr>
<td>Focus of Production</td>
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<tr>
<td>kernel stability</td>
<td>fast delivery</td>
<td>kernel stability</td>
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<td>Kernel Update Scope</td>
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<tr>
<td>whole kernel</td>
<td>affected components only</td>
<td>whole kernel</td>
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<tr>
<td>README Notes</td>
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<td>release note regression note</td>
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### Kernel Patch Type

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<tr>
<td>release note regression note</td>
<td>regression note</td>
<td>release note regression note</td>
</tr>
</tbody>
</table>
Kernel Patch Types – Further Delivery Aspects

SP Stack Kernels

Installation during automated upgrades/updates (SUM, Maintenance Planer)

Hotfixes – Delivery Frequency

▪ DW.SAR
  Kernel 722: 1x month
  Other Kernels: 1x week (Friday)
▪ Further archives on demand
▪ Restricted delivery in Quiet Phases
Quality First! **Quiet Phases**

**SP Stack Kernel**

- 8-week-long **Quiet Phase** before delivery
  - Stabilization
  - Increased testing effort
  - Productive use in SAP’s internal systems before delivery

😊 Longer wait for a fix that does not qualify for SP Stack Kernel
Emergency SP Stack Kernel

- Trigger: Critical “emergency“ issue in the SP Stack Kernel

- Aimed at customers only:
  - who have not yet installed the original SP Stack Kernel
  - or who are directly affected by the "emergency" issue
    (To assess relevance, check release notes of the original and the emergency kernels.)

- For most kernel installations, no action is required.

Example: Emergency SP Stack Kernel 753 PL 602

- Trigger: Problem in MS JDBC Driver, SAP Enterprise Portal on Windows only
- Only necessary for customers with MS SQLServer & SAP Enterprise Portal on Windows
Emergency SP Stack Kernel – Corrects the Original SP Stack Kernel

• Emergency SP Stack Kernel **does not** contain accumulated **hotfix** corrections.

• SAP update/upgrade tools use Emergency SP Stack Kernel instead of the original SP Stack Kernel

• „Emergency“ correction is usually delivered in advance as a **regular hotfix**.

**Example:** Emergency SP Stack Kernel 753 PL 602
• „Emergency“ correction was delivered as a hotfix in PL 612.
Recommendations
If you follow the SAP Support Package Stack Strategy, the latest SP Stack Kernel is installed automatically.

Hence the name: SP Stack Kernel
SP Stack Kernel – “README” Notes

Check the documentation of your SP Stack Kernel:

- release note
- DCK note (in DCK case)
- regression note

2556153 - Using Kernel 7.53 instead of Kernel 7.40, 7.41, 7.42, 7.45, or 7.49

Version 16 from 09.10.2020 in English

You want to use Kernel 7.53 instead of Kernel 7.40, 7.41, 7.42, 7.45, or 7.49.

Make sure that all platform-specific, database-specific, and other system requirements for Kernel 7.53 are met. See SAP Note 1999546 for more information. If you want to use Kernel 7.53 on HP-UX, refer to SAP Note 2283782 as well. For Linux Release SLES 11, RHEL 6, and OL 6, note the requirements specified in SAP Note 2195019 for the runtime environment of the operating system.
“never change a running system”

Apply additional kernel patches only to solve specific issues. This includes security kernel patches.
First Choice: Latest SP Stack Kernel, Second Choice: Hotfix

825 … 830 … 900 910 … 915

“safe harbor”

In the event of an error, use the latest SP Stack Kernel if it contains the correction.

Install a hotfix only if the error is not yet fixed in the SP Stack Kernel.
New: Template for Kernel Correction Notes

(as of June 2021)

Kernel correction notes:

The text block explains how to determine the appropriate patch archive and patch level to install the correction.

This correction is initially delivered with the kernel patch level listed in the "Support Package Patches" section of this SAP Note. If there is no entry, the patch is not yet available. You can subscribe to this SAP Note to be notified when new patch level entries are added. All higher patch levels also contain the correction.

This correction is delivered with the following kernel archives:

- hotfix - file dw.sar
- SP Stack Kernel - files SAPEXE.SAR and SAPEXEDB.SAR

Follow the SAP recommendations on how to select and install the kernel patch:

1. Apply the latest SP Stack Kernel if it contains the correction. For the list of current SP Stack Kernels, see SAP Note 2083594 (SAP Kernel Versions and SAP Kernel Patch Levels).
2. Otherwise, the next SP Stack Kernel will deliver the correction. Apply the hotfix only if you require the correction on short notice.
3. The correction may not be available for kernel releases that are out of maintenance. Please upgrade to the corresponding downward compatible kernel (DCK), see SAP Note 2083594 (SAP Kernel Versions and SAP Kernel Patch Levels).
4. Review the regression note for the target patch level before installing the patch. For details, see SAP Note 1802333 (Finding information about regressions in the SAP kernel).
5. For instructions on how to download and install kernel patches, see SAP Note 19466 (Downloading SAP kernel patches).
Find Out about Known Kernel Issues in Advance

“Check regression note”

Before applying a kernel patch:

Find out about known kernel errors in the associated regression note.

Check the regression note regularly (subscribe!)
How Do I Find the Associated Regression Note?

See SAP Note 1802333 (Finding information about regressions in the SAP kernel)

To find the regression note use the search term

"KRNL<xxx>PL<yyy>"

Example: "KRNL753PL816"
“README” Notes – Important Part of Kernel Maintenance Strategy

SAP note 2083594 (SAP Kernel Versions and SAP Kernel Patch Levels)

Release roadmap notes for each kernel code line

DCK note for each kernel code line

Release note (SP Stack Kernel)

SAP note 1802333 (Finding information about regressions in the SAP kernel)

Regression note (SP Stack Kernel und Hotfixes)

SAP Kernel Important News (SAP Community Wiki)

SAP HotNews (prio 1 corrections)

SAP note 19466 (Downloading SAP kernel patches)

New: SAP note 2966761 (Overview of SAP Kernel Correction Archives)
Questions and Answers
Thank you.