

Welcome to
BW4HANA
Training



THE NEXT GENERATION DATA WAREHOUSE ANNOUNCING SAP BW/4HANA

SAP BW/4HANA...

- is a new data warehouse solution
- is highly optimized for HANA
- solves analytics problems in seconds that take other systems days
- accelerates solution development
- means you have one version of the truth
- is ready for the internet of things at petabyte scale

 Simplicity

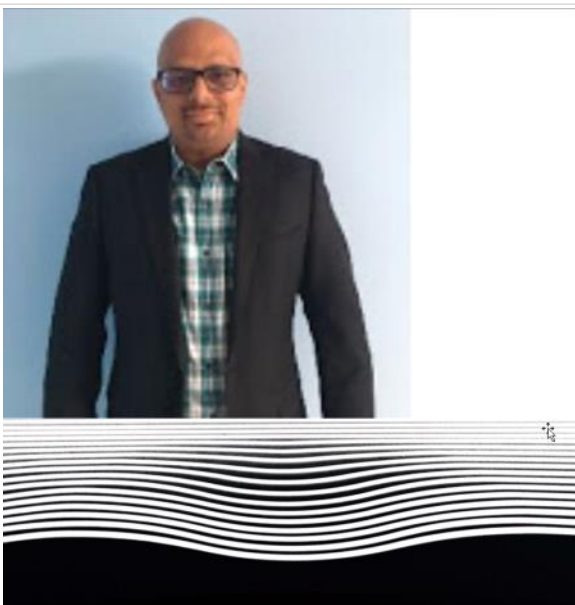
 Openness

SAP BW/4HANA
Design Principles

 Modern
Interface

 High
Performance

Trainer Bio



DEBANSHU
MUKHERJEE

SAP BW: 14+ yrs
(8 implementations)

SAP HANA: 6+ yrs
(5 implementations)

SAP BPC/BW-IP: 4 yrs
(4 implementations)

SAP ABAP: 10 yrs

SAC: 1 yr
(2 implementations)

Getting
Started

1. OneDrive - Sharing
2. Course Structure
3. Definition of SAP BW and Evolution of SAP BW to BW4HANA 2.0
4. Architecture of SAP BW4H 2.0
5. Difference between HANA & BW4HANA modeling.
6. BW4HANA Licensing
7. The new Eclipse feature and tools to work with BW4H
8. Salient features of SAP HANA as a DB
9. Setting up Eclipse Project.
10. Setting up BW4H Modeling Tools
11. BW4 Cockpit
12. Q & A

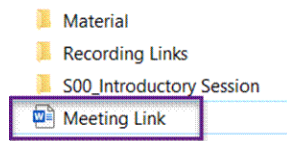
OneDrive Sharing

Important Links

The material OneDrive folder has been shared with all of you via a separate email. Please access the folder via that link and bookmark that link.

This folder is your one-stop-shop for accessing the following:

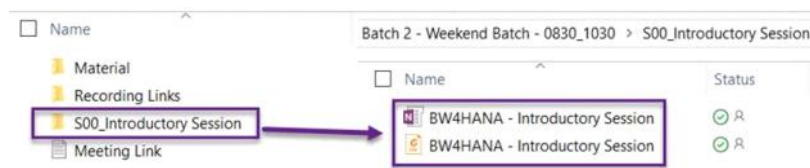
1. Link to join the weekend classes:



This meeting link will remain the same for all the classes. If, due to any reason, the meeting link changed, then it'll be updated in this word document so this will be your reference to get the meeting link for the class.

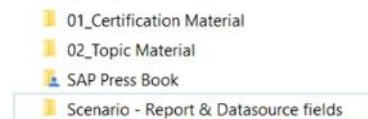
2. Session-specific material which we'll go through during each class.

These folders will have naming convention as 'S**_<Topic_Covered>' and this will have the class notes both in OneNote and PDF format:



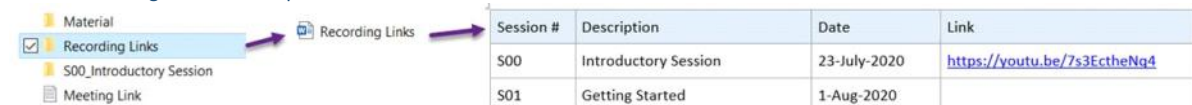
3. Material Folder which contains:

- a. Certification material – this contains material for both full and delta certification
- b. Business Scenario – which will be used as the basis for our exercises.
- c. SAP Press Book on BW4HANA.
- d. Topic specific material such as on ADSOs, CDS Views, Simplification List etc.



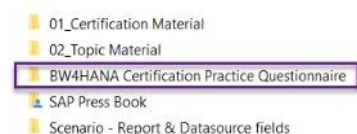
4. Recording Links

All the recording links will be updated in a word document in the below folder:



you can access all the recordings either on the YouTube channel, mentioned in the next point below, or from the individual links in this word document.

5. Certification Practice questionnaire



This contains list of 80 practice questions which'll give you an idea on what type of questions you can expect in the certification.

YouTube Playlist for all the recordings

All recordings will be uploaded on YouTube and access will be granted to you all.

You can access the recording after 1 day. E.g. for class on 1st August' 2020, recording will be available on 2nd August' 2020

YouTube Playlist where all the videos will be uploaded (plz bookmark this link):

<https://www.youtube.com/playlist?list=PL55XwhlunOKbbQ0iyqBd5hNFnhwukFgFg>



BW4HANA - Training (Batch 2)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 1000 1001 1002 1003 1004 1005 1006 1007 1008 1009 1010 1011 1012 1013 1014 1015 1016 1017 1018 1019 1020 1021 1022 1023 1024 1025 1026 1027 1028 1029 1030 1031 1032 1033 1034 1035 1036 1037 1038 1039 1040 1041 1042 1043 1044 1045 1046 1047 1048 1049 1050 1051 1052 1053 1054 1055 1056 1057 1058 1059 1060 1061 1062 1063 1064 1065 1066 1067 1068 1069 1070 1071 1072 1073 1074 1075 1076 1077 1078 1079 1080 1081 1082 1083 1084 1085 1086 1087 1088 1089 1090 1091 1092 1093 1094 1095 1096 1097 1098 1099 1100 1101 1102 1103 1104 1105 1106 1107 1108 1109 1110 1111 1112 1113 1114 1115 1116 1117 1118 1119 1120 1121 1122 1123 1124 1125 1126 1127 1128 1129 1130 1131 1132 1133 1134 1135 1136 1137 1138 1139 1140 1141 1142 1143 1144 1145 1146 1147 1148 1149 1150 1151 1152 1153 1154 1155 1156 1157 1158 1159 1160 1161 1162 1163 1164 1165 1166 1167 1168 1169 1170 1171 1172 1173 1174 1175 1176 1177 1178 1179 1180 1181 1182 1183 1184 1185 1186 1187 1188 1189 1190 1191 1192 1193 1194 1195 1196 1197 1198 1199 1200 1201 1202 1203 1204 1205 1206 1207 1208 1209 1210 1211 1212 1213 1214 1215 1216 1217 1218 1219 1220 1221 1222 1223 1224 1225 1226 1227 1228 1229 1230 1231 1232 1233 1234 1235 1236 1237 1238 1239 1240 1241 1242 1243 1244 1245 1246 1247 1248 1249 1250 1251 1252 1253 1254 1255 1256 1257 1258 1259 1260 1261 1262 1263 1264 1265 1266 1267 1268 1269 1270 1271 1272 1273 1274 1275 1276 1277 1278 1279 1280 1281 1282 1283 1284 1285 1286 1287 1288 1289 1290 1291 1292 1293 1294 1295 1296 1297 1298 1299 1300 1301 1302 1303 1304 1305 1306 1307 1308 1309 1310 1311 1312 1313 1314 1315 1316 1317 1318 1319 1320 1321 1322 1323 1324 1325 1326 1327 1328 1329 1330 1331 1332 1333 1334 1335 1336 1337 1338 1339 1340 1341 1342 1343 1344 1345 1346 1347 1348 1349 1350 1351 1352 1353 1354 1355 1356 1357 1358 1359 1360 1361 1362 1363 1364 1365 1366 1367 1368 1369 1370 1371 1372 1373 1374 1375 1376 1377 1378 1379 1380 1381 1382 1383 1384 1385 1386 1387 1388 1389 1390 1391 1392 1393 1394 1395 1396 1397 1398 1399 1400 1401 1402 1403 1404 1405 1406 1407 1408 1409 1410 1411 1412 1413 1414 1415 1416 1417 1418 1419 1420 1421 1422 1423 1424 1425 1426 1427 1428 1429 1430 1431 1432 1433 1434 1435 1436 1437 1438 1439 1440 1441 1442 1443 1444 1445 1446 1447 1448 1449 1450 1451 1452 1453 1454 1455 1456 1457 1458 1459 1460 1461 1462 1463 1464 1465 1466 1467 1468 1469 1470 1471 1472 1473 1474 1475 1476 1477 1478 1479 1480 1481 1482 1483 1484 1485 1486 1487 1488 1489 1490 1491 1492 1493 1494 1495 1496 1497 1498 1499 1500 1501 1502 1503 1504 1505 1506 1507 1508 1509 1510 1511 1512 1513 1514 1515 1516 1517 1518 1519 1520 1521 1522 1523 1524 1525 1526 1527 1528 1529 1530 1531 1532 1533 1534 1535 1536 1537 1538 1539 1540 1541 1542 1543 1544 1545 1546 1547 1548 1549 1550 1551 1552 1553 1554 1555 1556 1557 1558 1559 1560 1561 1562 1563 1564 1565 1566 1567 1568 1569 1570 1571 1572 1573 1574 1575 1576 1577 1578 1579 1580 1581 1582 1583 1584 1585 1586 1587 1588 1589 1590 1591 1592 1593 1594 1595 1596 1597 1598 1599 1600 1601 1602 1603 1604 1605 1606 1607 1608 1609 1610 1611 1612 1613 1614 1615 1616 1617 1618 1619 1620 1621 1622 1623 1624 1625 1626 1627 1628 1629 1630 1631 1632 1633 1634 1635 1636 1637 1638 1639 1640 1641 1642 1643 1644 1645 1646 1647 1648 1649 1650 1651 1652 1653 1654 1655 1656 1657 1658 1659 1660 1661 1662 1663 1664 1665 1666 1667 1668 1669 1670 1671 1672 1673 1674 1675 1676 1677 1678 1679 1680 1681 1682 1683 1684 1685 1686 1687 1688 1689 1690 1691 1692 1693 1694 1695 1696 1697 1698 1699 1700 1701 1702 1703 1704 1705 1706 1707 1708 1709 1710 1711 1712 1713 1714 1715 1716 1717 1718 1719 1720 1721 1722 1723 1724 1725 1726 1727 1728 1729 1730 1731 1732 1733 1734 1735 1736 1737 1738 1739 1740 1741 1742 1743 1744 1745 1746 1747 1748 1749 1750 1751 1752 1753 1754 1755 1756 1757 1758 1759 1760 1761 1762 1763 1764 1765 1766 1767 1768 1769 1770 1771 1772 1773 1774 1775 1776 1777 1778 1779 1780 1781 1782 1783 1784 1785 1786 1787 1788 1789 1790 1791 1792 1793 1794 1795 1796 1797 1798 1799 1800 1801 1802 1803 1804 1805 1806 1807 1808 1809 1810 1811 1812 1813 1814 1815 1816 1817 1818 1819 1820 1821 1822 1823 1824 1825 1826 1827 1828 1829 1830 1831 1832 1833 1834 1835 1836 1837 1838 1839 1840 1841 1842 1843 1844 1845 1846 1847 1848 1849 1850 1851 1852 1853 1854 1855 1856 1857 1858 1859 1860 1861 1862 1863 1864 1865 1866 1867 1868 1869 1870 1871 1872 1873 1874 1875 1876 1877 1878 1879 1880 1881 1882 1883 1884 1885 1886 1887 1888 1889 1890 1891 1892 1893 1894 1895 1896 1897 1898 1899 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938 1939 1940 1941 1942 1943 1944 1945 1946 1947 1948 1949 1950 1951 1952 1953 1954 1955 1956 1957 1958 1959 1960 1961 1962 1963 1964 1965 1966 1967 1968 1969 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040 2041 2042 2043 2044 2045 2046 2047 2048 2049 2050 2051 2052 2053 2054 2055 2056 2057 2058 2059 2060 2061 2062 2063 2064 2065 2066 2067 2068 2069 2070 2071 2072 2073 2074 2075 2076 2077 2078 2079 2080 2081 2082 2083 2084 2085 2086 2087 2088 2089 2090 2091 2092 2093 2094 2095 2096 2097 2098 2099 2100 2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111 2112 2113 2114 2115 2116 2117 2118 2119 2120 2121 2122 2123 2124 2125 2126 2127 2128 2129 2130 2131 2132 2133 2134 2135 2136 2137 2138 2139 2140 2141 2142 2143 2144 2145 2146 2147 2148 2149 2150 2151 2152 2153 2154 2155 2156 2157 2158 2159 2160 2161 2162 2163 2164 2165 2166 2167 2168 2169 2170 2171 2172 2173 2174 2175 2176 2177 2178 2179 2180 2181 2182 2183 2184 2185 2186 2187 2188 2189 2190 2191 2192 2193 2194 2195 2196 2197 2198 2199 2200 2201 2202 2203 2204 2205 2206 2207 2208 2209 2210 2211 2212 2213 2214 2215 2216 2217 2218 2219 2220 2221 2222 2223 2224 2225 2226 2227 2228 2229 2230 2231 2232 2233 2234 2235 2236 2237 2238 2239 2240 2241 2242 2243 2244 2245 2246 2247 2248 2249 2250 2251 2252 2253 2254 2255 2256 2257 2258 2259 2260 2261 2262 2263 2264 2265 2266 2267 2268 2269 2270 2271 2272 2273 2274 2275 2276 2277 2278 2279 2280 2281 2282 2283 2284 2285 2286 2287 2288 2289 2290 2291 2292 2293 2294 2295 2296 2297 2298 2299 2300 2301 2302 2303 2304 2305 2306 2307 2308 2309 2310 2311 2312 2313 2314 2315 2316 2317 2318 2319 2320 2321 2322 2323 2324 2325 2326 2327 2328 2329 2330 2331 2332 2333 2334 2335 2336 2337 2338 2339 2340 2341 2342 2343 2344 2345 2346 2347 2348 2349 2350 2351 2352 2353 2354 2355 2356 2357 2358 2359 2360 2361 2362 2363 2364 2365 2366 2367 2368 2369 2370 2371 2372 2373 2374 2375 2376 2377 2378 2379 2380 2381 2382 2383 2384 2385 2386 2387 2388 2389 2390 2391 2392 2393 2394 2395 2396 2397 2398 2399 2400 2401 2402 2403 2404 2405 2406 2407 2408 2409 2410 2411 2412 2413 2414 2415 2416 2417 2418 2419 2420 2421 2422 2423 2424 2425 2426 2427 2428 2429 2430 2431 2432 2433 2434 2435 2436 2437 2438 2439 2440 2441 2442 2443 2444 2445 2446 2447 2448 2449 2450 2451 2452 2453 2454 2455 2456 2457 2458 2459 2460 2461 2462 2463 2464 2465 2466 2467 2468 2469 2470 2471 2472 2473 2474 2475 2476 2477 2478 2479 2480 2481 2482 2483 2484 2485 2486 2487 2488 2489 2490 2491 2492 2493 2494 2495 2496 2497 2498 2499 2500 2501 2502 2503 2504 2505 2506 2507 2508 2509 2510 2511 2512 2513 2514 2515 2516 2517 2518 2519 2520 2521 2522 2523 2524 2525 2526 2527 2528 2529 2530 2531 2532 2533 2534 2535 2536 2537 2538 2539 2540 2541 2542 2543 2544 2545 2546 2547 2548 2549 2550 2551 2552 2553 2554 2555 2556 2557 2558 2559 2560 2561 2562 2563 2564 2565 2566 2567 2568 2569 2570 2571 2572 2573 2574 2575 2576 2577 2578 2579 2580 2581 2582 2583 2584 2585 2586 2587 2588 2589 2590 2591 2592 2593 2594 2595 2596 2597 2598 2599 2600 2601 2602 2603 2604 2605 2606 2607 2608 2609

Course Structure & Details

Who is this course for?	1. BW consultants with basic knowledge. 2. Seasoned BW consultants looking for upskilling in BW4HANA. 3. Frontend consultants (Functional/Reporting users/BPC/SAC) interested to know the backend infrastructure. 4. Anyone who's interested to know about or start a career in BW (will require additional efforts)																		
Certifications	<table><tr><td>E_BW4HANA200</td><td>This is specialist/delta certification which I did. This you can only do if you have BW on HANA certification. BW On HANA (7.3, 7.4, 7.5) https://training.sap.com/certification/e_bw4hana200-sap-certified-application-specialist--sap-bw4hana-20-delta-g/</td></tr><tr><td>C_BW4HANA_20 -</td><td>This is full certification meaning if you don't have BW on HANA certification then you can take this. This has no pre-requisite. https://training.sap.com/certification/c_bw4hana_20-sap-certified-application-associate---reporting-modeling-and-data-acquisition-with-sap-bw4hana-2x-g/</td></tr></table>				E_BW4HANA200	This is specialist/delta certification which I did. This you can only do if you have BW on HANA certification. BW On HANA (7.3, 7.4, 7.5) https://training.sap.com/certification/e_bw4hana200-sap-certified-application-specialist--sap-bw4hana-20-delta-g/	C_BW4HANA_20 -	This is full certification meaning if you don't have BW on HANA certification then you can take this. This has no pre-requisite. https://training.sap.com/certification/c_bw4hana_20-sap-certified-application-associate---reporting-modeling-and-data-acquisition-with-sap-bw4hana-2x-g/											
E_BW4HANA200	This is specialist/delta certification which I did. This you can only do if you have BW on HANA certification. BW On HANA (7.3, 7.4, 7.5) https://training.sap.com/certification/e_bw4hana200-sap-certified-application-specialist--sap-bw4hana-20-delta-g/																		
C_BW4HANA_20 -	This is full certification meaning if you don't have BW on HANA certification then you can take this. This has no pre-requisite. https://training.sap.com/certification/c_bw4hana_20-sap-certified-application-associate---reporting-modeling-and-data-acquisition-with-sap-bw4hana-2x-g/																		
Server Vendors	Get Trained GT	sruthi.getraind@gmail.com	Best server and Support. SAC Integration.																
	B4H 2.0 SP4 S4H 1909 ODP SDA SAC integrated																		
Course Modus Operandi	<table><tr><td>Business Scenario based</td><td><ul style="list-style-type: none">Requirement for a custom story from business in SAC.We'll start with business blueprint of reports and story.Create Native HANA models using the HANA CVs, Table function and DB Procedures based on SDA virtual tables.Then create and enhance BW Stnd Datasources. (LO Cockpit)Create and enhance CDS Views and extractors based on CDS Views.Creation of custom CDS Views in S4.<ul style="list-style-type: none">Introduction to CDS Views and types of CDS Views.Main CDS View + Extension CDS ViewActivate delta from CDS view based extractors - generic and ODQ-based.Using ODQ and understand the new subscription based model.Custom ADSOs, DTPs and Transformations creation in BW.<ul style="list-style-type: none">Staging ADSO based on fields as Corporate memory layer.Standard ADSO based on InfoObjects in DWH layer.Custom routines in transformations using AMDP Class and Methods.Creating OpenODS views for virtual access using SDA.Creating Composite Provider based on the ADSOs, OpenODS Views and HANA CV using UNION/JOIN.Using new Composite Provider features such as Aggregation, Projection, SQL filter and Calculated column.Create Custom BW Query in Eclipse for Sales Hdr and Sales Item.Creating customer exit variables using Enhancement Spot RSROA_VARIABLES_EXIT_BADI.Creating HANA Exit variables using RSROA_VARIABLES_HANA_EXIT and AMDP Class and method.Custom BW process chain creation and monitoring in BW4 Cockpit.Activating streaming process chain feature for near-real time extraction.Data manipulation using Inbound table - replacement of PSA-based data modifications.Configuring SAC to BW connectivity using CORS.Consuming BW Query in SAC and creating SAC Model and Story.</td></tr><tr><td>Optional (Based on time availability)</td><td>FI new datasource and extraction. Setting up analysis authorizations on ADSOs. Generation of CVs from ADSOs, CompProvs and BW Queries. Inventory Data Flow Streaming process chain OpenHub Migration scenarios</td></tr></table>				Business Scenario based	<ul style="list-style-type: none">Requirement for a custom story from business in SAC.We'll start with business blueprint of reports and story.Create Native HANA models using the HANA CVs, Table function and DB Procedures based on SDA virtual tables.Then create and enhance BW Stnd Datasources. (LO Cockpit)Create and enhance CDS Views and extractors based on CDS Views.Creation of custom CDS Views in S4.<ul style="list-style-type: none">Introduction to CDS Views and types of CDS Views.Main CDS View + Extension CDS ViewActivate delta from CDS view based extractors - generic and ODQ-based.Using ODQ and understand the new subscription based model.Custom ADSOs, DTPs and Transformations creation in BW.<ul style="list-style-type: none">Staging ADSO based on fields as Corporate memory layer.Standard ADSO based on InfoObjects in DWH layer.Custom routines in transformations using AMDP Class and Methods.Creating OpenODS views for virtual access using SDA.Creating Composite Provider based on the ADSOs, OpenODS Views and HANA CV using UNION/JOIN.Using new Composite Provider features such as Aggregation, Projection, SQL filter and Calculated column.Create Custom BW Query in Eclipse for Sales Hdr and Sales Item.Creating customer exit variables using Enhancement Spot RSROA_VARIABLES_EXIT_BADI.Creating HANA Exit variables using RSROA_VARIABLES_HANA_EXIT and AMDP Class and method.Custom BW process chain creation and monitoring in BW4 Cockpit.Activating streaming process chain feature for near-real time extraction.Data manipulation using Inbound table - replacement of PSA-based data modifications.Configuring SAC to BW connectivity using CORS.Consuming BW Query in SAC and creating SAC Model and Story.	Optional (Based on time availability)	FI new datasource and extraction. Setting up analysis authorizations on ADSOs. Generation of CVs from ADSOs, CompProvs and BW Queries. Inventory Data Flow Streaming process chain OpenHub Migration scenarios											
Business Scenario based	<ul style="list-style-type: none">Requirement for a custom story from business in SAC.We'll start with business blueprint of reports and story.Create Native HANA models using the HANA CVs, Table function and DB Procedures based on SDA virtual tables.Then create and enhance BW Stnd Datasources. (LO Cockpit)Create and enhance CDS Views and extractors based on CDS Views.Creation of custom CDS Views in S4.<ul style="list-style-type: none">Introduction to CDS Views and types of CDS Views.Main CDS View + Extension CDS ViewActivate delta from CDS view based extractors - generic and ODQ-based.Using ODQ and understand the new subscription based model.Custom ADSOs, DTPs and Transformations creation in BW.<ul style="list-style-type: none">Staging ADSO based on fields as Corporate memory layer.Standard ADSO based on InfoObjects in DWH layer.Custom routines in transformations using AMDP Class and Methods.Creating OpenODS views for virtual access using SDA.Creating Composite Provider based on the ADSOs, OpenODS Views and HANA CV using UNION/JOIN.Using new Composite Provider features such as Aggregation, Projection, SQL filter and Calculated column.Create Custom BW Query in Eclipse for Sales Hdr and Sales Item.Creating customer exit variables using Enhancement Spot RSROA_VARIABLES_EXIT_BADI.Creating HANA Exit variables using RSROA_VARIABLES_HANA_EXIT and AMDP Class and method.Custom BW process chain creation and monitoring in BW4 Cockpit.Activating streaming process chain feature for near-real time extraction.Data manipulation using Inbound table - replacement of PSA-based data modifications.Configuring SAC to BW connectivity using CORS.Consuming BW Query in SAC and creating SAC Model and Story.																		
Optional (Based on time availability)	FI new datasource and extraction. Setting up analysis authorizations on ADSOs. Generation of CVs from ADSOs, CompProvs and BW Queries. Inventory Data Flow Streaming process chain OpenHub Migration scenarios																		
Duration and Timing	1. Course Duration : 7 weeks (Weekends-only : Saturday Sunday). 1st Aug to 13th Sept 2. Course timing <table><tr><td>Weekends</td><td>Time (EST - Canada)</td><td>Time (IST - India)</td><td>Time (UTC - UK)</td><td>Time (AEDT - Australia)**</td></tr><tr><td>Saturday</td><td>8:30 AM - 10:30 AM</td><td>6:00 PM - 8:00 PM</td><td>1:30 PM - 3:30 PM</td><td>Saturday (10:30 PM - 12:30 AM)</td></tr><tr><td>Sunday</td><td>8:30 AM - 10:30 AM</td><td>6:00 PM - 8:00 PM</td><td>1:30 PM - 3:30 PM</td><td>Sunday (10:30 PM - 12:30 AM)</td></tr></table> **For Australian timezone, this might be nonviable. 3. Course Duration : 7 weeks (Weekends-only : Saturday Sunday). Batch starting: 1st August				Weekends	Time (EST - Canada)	Time (IST - India)	Time (UTC - UK)	Time (AEDT - Australia)**	Saturday	8:30 AM - 10:30 AM	6:00 PM - 8:00 PM	1:30 PM - 3:30 PM	Saturday (10:30 PM - 12:30 AM)	Sunday	8:30 AM - 10:30 AM	6:00 PM - 8:00 PM	1:30 PM - 3:30 PM	Sunday (10:30 PM - 12:30 AM)
Weekends	Time (EST - Canada)	Time (IST - India)	Time (UTC - UK)	Time (AEDT - Australia)**															
Saturday	8:30 AM - 10:30 AM	6:00 PM - 8:00 PM	1:30 PM - 3:30 PM	Saturday (10:30 PM - 12:30 AM)															
Sunday	8:30 AM - 10:30 AM	6:00 PM - 8:00 PM	1:30 PM - 3:30 PM	Sunday (10:30 PM - 12:30 AM)															
Software Used	Zoom Meeting. Link will be in the 'Meeting Link' word document.																		
Recordings	Available to view-only on YouTube Channel (Lifetime Access) BW4HANA - Training - Batch 2																		



Downloadable: No
Recording Availability: Next Day

Q & A
30 min before the main session
30 min after the main session.

Topics and Timing

Topic	Description	Date Time
Getting Started	1. Definition of SAP BW and Evolution of SAP BW to BW4HANA 2.0 2. Architecture of SAP BW4 2.0 3. Difference between HANA & BW4HANA modeling. 4. The new Eclipse feature and tools to work with BW4 5. Salient features of SAP HANA as a DB 6. BW4 Cockpit	1st Aug: 8:30 AM - 10:30 AM
SAP Native HANA Modeling Fundamentals - Part 1	1. HANA Calculation Views 2. HANA Virtual Tables 3. HANA Analytic Privileges 4. HANA DB Procedure 5. HANA XS Jobs - scheduling DB Procedures	2nd Aug: 8:30 AM - 10:30 AM
SAP Native HANA Modeling Fundamentals - Part 2	1. HANA Calculation Views 2. HANA Virtual Tables 3. HANA Analytic Privileges 4. HANA DB Procedure 5. HANA XS Jobs - scheduling DB Procedures	8th Aug: 8:30 AM - 10:30 AM
B4H - Intro, Architecture & LSA++	1. B4H Introduction 2. Old vs New modeling Objects 3. B4H Architecture 4. LSA++ flow 5. New CDS View based Datasources	9th Aug: 8:30 AM - 10:30 AM
Datasources, Enhancements & ODQ - Part 1	1. Scenario Introduction - Report from User 2. LO Cockpit Datasource activation process 3. 2LIS_11_VAHDR Activation 4. 2LIS_11_VAHDR Enhancement <ul style="list-style-type: none"> 1. Old way 2. New way - RSU5_SAPI_BADI 3. Method 1 - New BADI Implementation for every DS. Method 2 - New method for every DS 5. 2LIS_11_VAITHM Activation 6. 2LIS_11_VAITHM Enhancement using Method 2	15th Aug: 8:30 AM - 10:30 AM
Datasources, Enhancements & ODQ - Part 2	1. ODP concept 2. ODQs and Delta 3. Delta from stnd datasources - 2LIS_11_VAHDR/ITM 4. CDS View Intro 5. Datasource based on CDS View - Full. 6. Datasource based on CDS View - Delta (Generic w/o ODQs) 7. Datasource based on CDS View - Delta (Generic with ODQs) 8. Enhancing datasource based on CDS views using extension CDS Views.	16th Aug: 8:30 AM - 10:30 AM
Datasources, Enhancements & ODQ - Part 3	1. ODP concept 2. ODQs and Delta 3. Delta from stnd datasources - 2LIS_11_VAHDR/ITM 4. CDS View Intro 5. Datasource based on CDS View - Full. 6. Datasource based on CDS View - Delta (Generic w/o ODQs) 7. Datasource based on CDS View - Delta (Generic with ODQs) 8. Enhancing datasource based on CDS views using extension CDS Views. 9. More on CDS Views	22nd Aug: 8:30 AM - 10:30 AM
B4H - Modeling - Part 1 ADSOs	1. Definition and Positioning 2. Types of ADSOs 3. Mapping to previous versions 4. Details on each type of ADSO 5. Active/Nonactive concept 6. Partitioning and Indexing	23rd Aug: 8:30 AM - 10:30 AM
B4H - Modeling - Part 2 ADSOs & Transformations	1. Transformations in BW4HANA. 2. DTP in BW4HANA 3. Creating LSA++ flow for Header and Item. Header from stnd DS and Item from CDS View DS. 4. Enhance CDS view for item for material type.	29th Aug: 8:30 AM - 10:30 AM

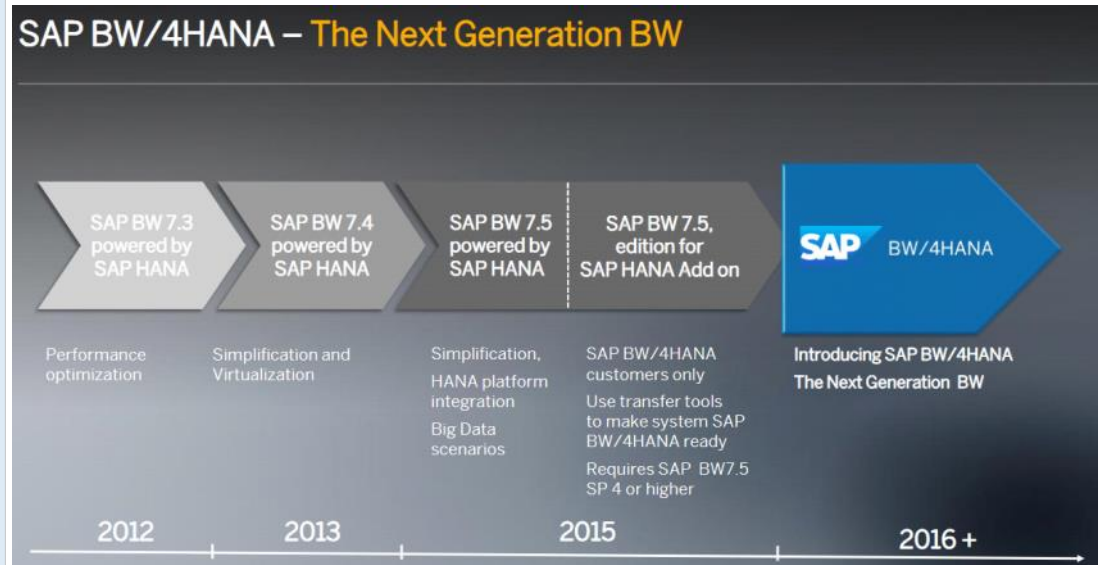
	5. Create Infosource for Header and Item 6. Create transformation (1st level) 7. Create transformation (2nd level) 8. Create lookups 9. Create formulae 10. Create AMDP based Start routine for removing special characters. 11. Create AMDP based field routine for quantity conversion from sales unit to base unit (OQUANT_B) 12. Create ABAP based end routine to populate update date.(OUPD_DATE) 13. Debug AMDP transformation. 14. Test the overall flow.	
B4H - Modeling - Part 3 OpenODS Views	1. Purpose 2. Usage 3. Types 4. OpenODS view - virtual model using SDA 5. OpenODS view - Generate Data Flow	30th Aug: 8:30 AM - 10:30 AM
B4H - Modeling - Part 4 Composite Providers	1. Purpose 2. Usage 3. UNION & JOIN 4. 2.0 Enhancements 5. Navigation Attribute	5th Sep: 8:30 AM - 10:30 AM
B4H - Reporting - Part 1 BW Query & exit variables	1. BW Query 2. Customer Exit Variables using BADI 3. HANA Exit Variables using AMDP Class and Method 4. Debugging customer exit variables. 5. Debugging HANA exit variables.	6th Sep: 8:30 AM - 10:30 AM
B4H - Reporting - Part 2 B4H - SAC Integration	1. What is SAC (SAP Analytics Cloud) 2. Live vs Import Data connections 3. BW4-SAC Live data connectivity via CORS 4. BW4-SAC features 5. SAC Models and Stories using B4H Queries	12th Sep: 8:30 AM - 10:30 AM
BW4 - Miscellaneous Topics - Part 2	1. Inventory Mgmt 2. Streaming Process Chains 3. Migration Scenarios	13th Sep: 8:30 AM - 10:30 AM
B4H Useful Tcodes	List of handy BW4 tcodes and programs	5th July: 10 AM - 12 Noon
BW4 Interview Questions	List of questions for BW4 interview	5th July: 10 AM - 12 Noon
Resume Preparation Tips	Resume preparation tips	5th July: 10 AM - 12 Noon
B4H Certification Practice Questionnaire	List of 80 questions for practice Useful for certification	

Definition of SAP BW and Evolution of SAP BW to BW4HANA 2.0

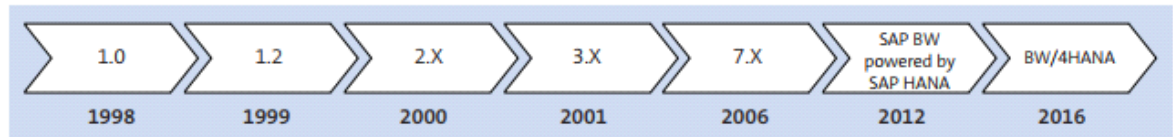
What is BW4HANA

BW4HANA is SAP's proprietary Datawarehousing Software.
New Product (version starting from 1.x, 2.x...)

DWC - Datawarehouse Cloud

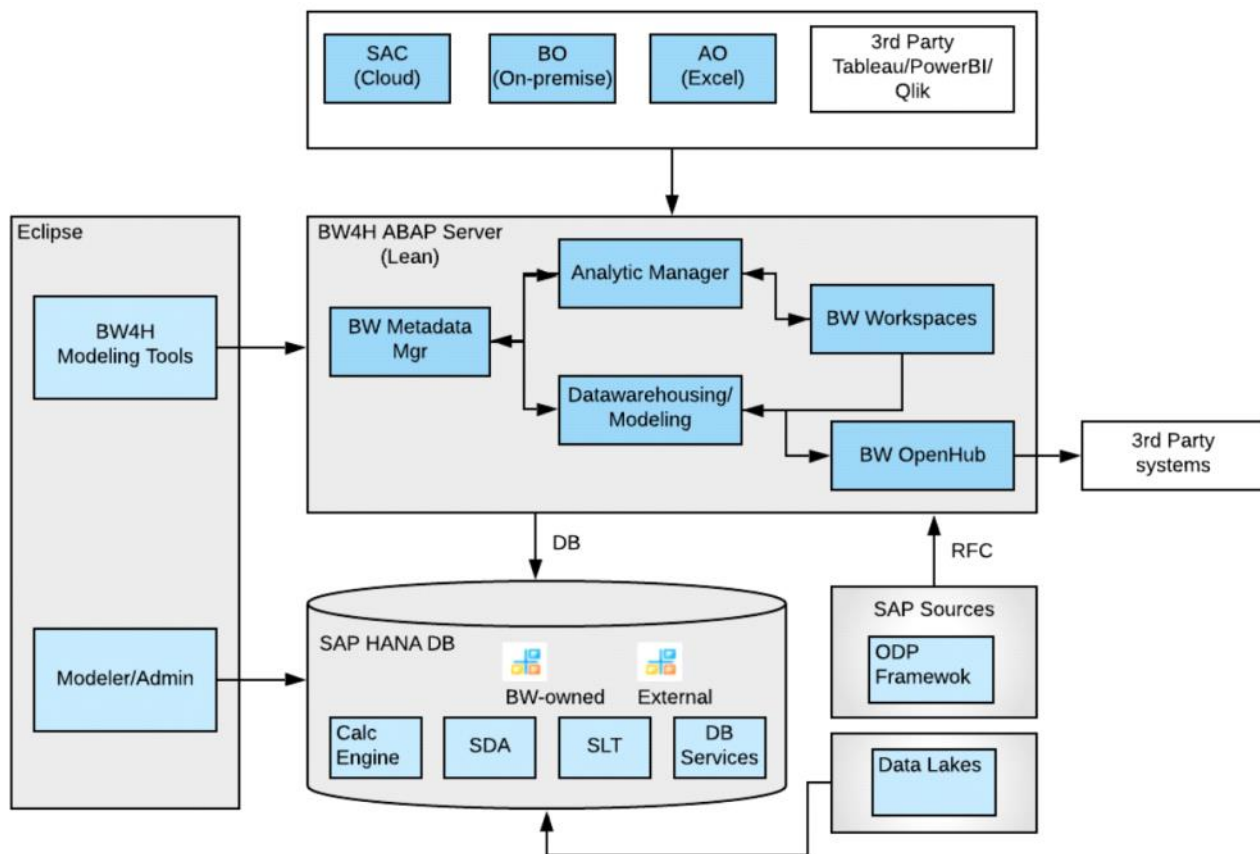


History of BW



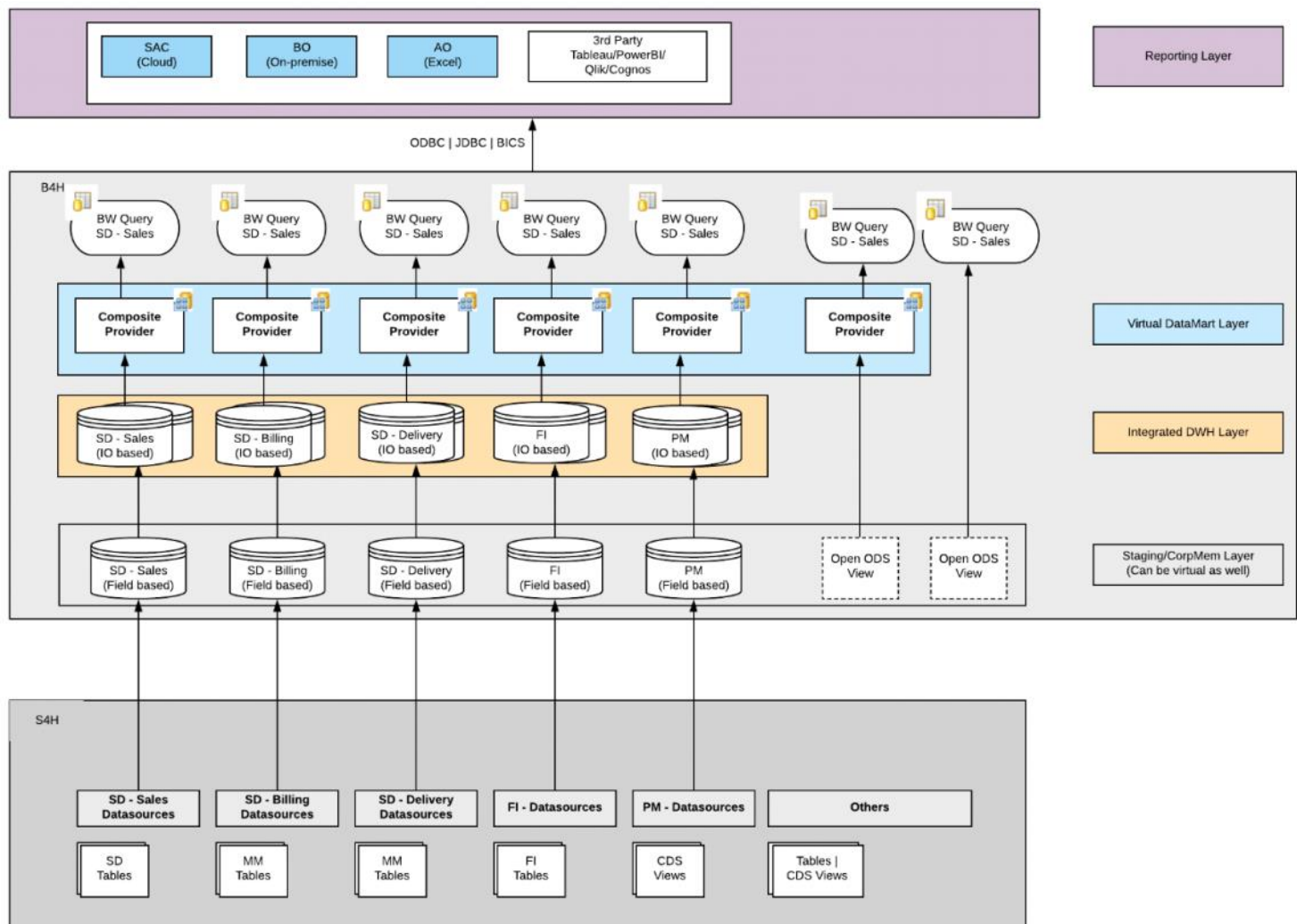
BW4HANA 2.0 - Feb'25 2019

Architecture of SAP BW4 2.0



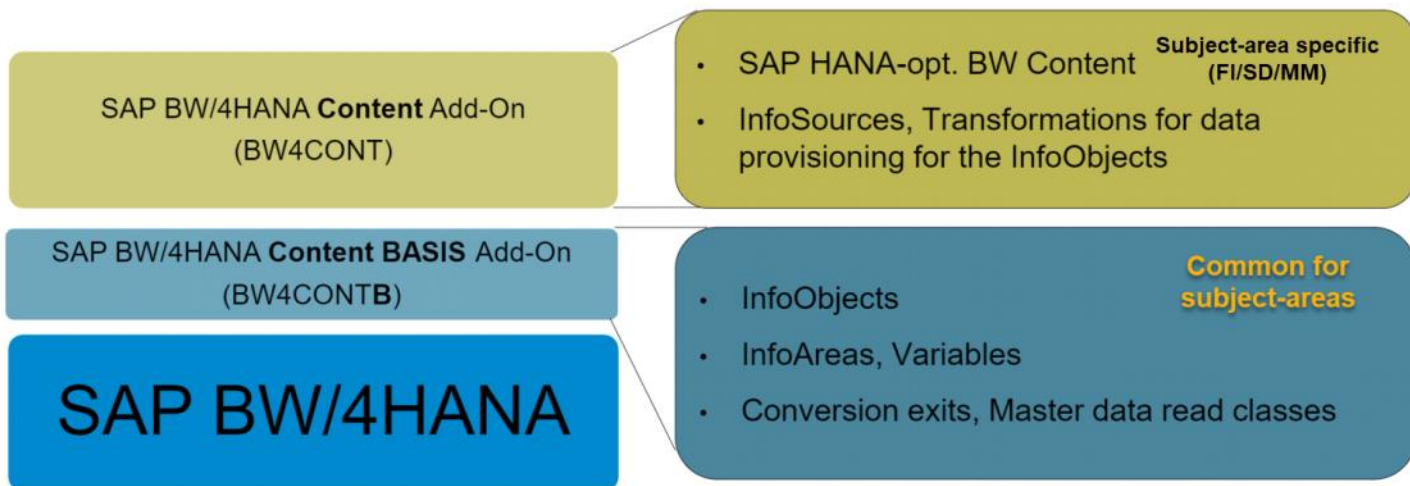
Q	What is the difference between SAP NetWeaver Application Server ABAP (SAP_ABA 750) and the so called "Lean ABAP Application Server" (SAP_ABA 75A)?
A	<ol style="list-style-type: none"> 1. The primary difference is that SAP_ABA 75A/B/C/D includes support for long material numbers (CHAR 40, see SAP Note 2267140). 2. Millions of lines of code for obsolete objects were removed such as old interfaces, EP portal, BSP applications, and the migration workbench. In a nutshell, objects related to JAVA stack are no longer there. <p>Side note: SAP_ABA 75A is also the foundation for SAP S/4HANA.</p>

B4H - Dataflow - LSA++



SAP BW/4HANA Content Add-Ons

SAP BW/4HANA Content consists of 2 Add-Ons:
quarterly delivery of SPs incl. new content



	Customer usage of SAP delivered Business Content	Custom-built Content	Required
Scenario A	BW DataSources	InfoObjects, Open ODS Views, ADSOs, Transformations, CompositeProviders, Variables, Queries	Enable BW DataSources for ODP (SAP Note 2232584) S/4HANA Whitelisted BW DataSources (SAP Note 2500202)
Scenario B	BW DataSources, InfoObjects ,as is' or ,as template'	Open ODS Views, ADSOs, Transformations, CompositeProviders, Variables, Queries	In addition: <div>SAP BW/4HANA Content BASIS Add-On (BW4CONTB)</div>
Scenario C	BW DataSources, InfoObjects, ADSOs, Transformations, CompositeProviders, Variables, Queries ,as is' or ,as template'	As required	In addition: <div>SAP BW/4HANA Content Add-On (BW4CONT)</div>

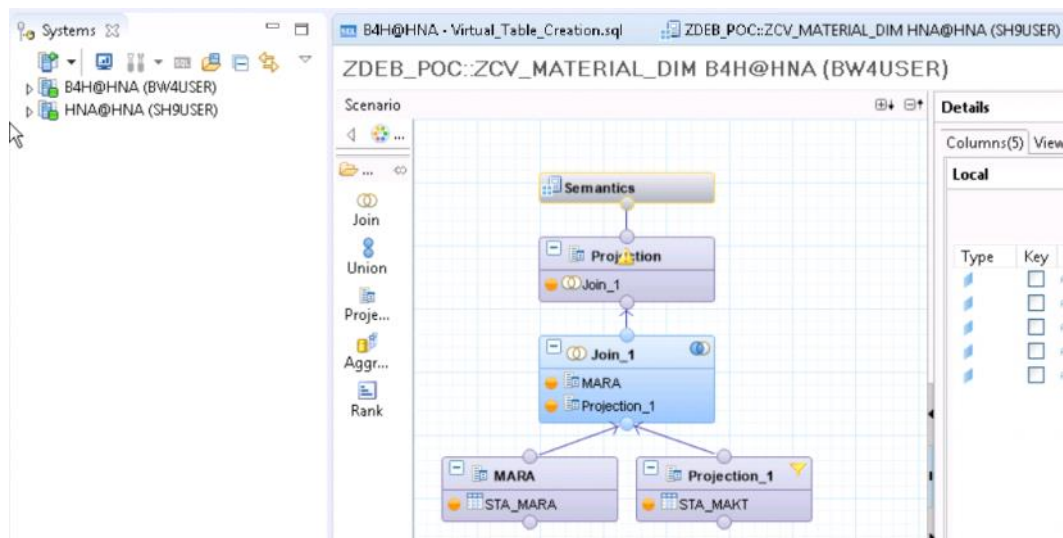
Important/Useful BW Tcodes

RSA1	To check process chains and BI Content Activation 1. BI Activation 2. Transports 3. Administration
BW4WEB	To launch BW4 Cockpit

Difference between HANA & BW4HANA modeling.

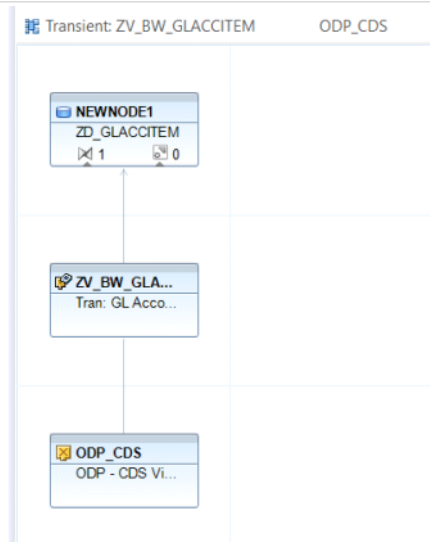
HANA Modeling

- Done in HANA DB
- DB Schemas and Tables
- DB Packages
- Calculation Views
- DB Procedures
- DB Table Functions



BW4H Modeling

- B4H_100_ABAP
- B4H_100_BW [B4H, 100, BW4HANA3, EN]
 - Favorites
 - Debanshu [ZDEB]
 - BW-IP Objects [ZBWIP]
 - CompositeProvider
 - Aggregation Level
 - DataStore Object (advanced)
 - Cost - Planning [ZDCST01]
 - Revenue - Planning [ZDREV01]
 - Characteristic
 - Key Figure
 - DataStore Object (advanced)
 - DataSource
 - Tran: GL Account Line Item [ZV_BW_GLACCITEM (ODP_CDS)]
 - BW Repository
 - Data Sources
 - .bw
 - .settings
 - .destination.properties
 - .project
 - S4H_200_ABAP [S4H, 200, BW4HANA3, EN]



BW/4HANA Licensing

BW/4HANA Licensing

1st choose HANA DB Size

License - Runtime (REB, REAB) | Full Use (Std | Enterprise)

-> BW/4HANA is licensed in blocks of 64 GB. You can expect, the more, the cheaper.

-> For HANA there are 2 Options:

--> HANA REAB (only BW/4HANA application)

--> HANA full use Enterprise Edition

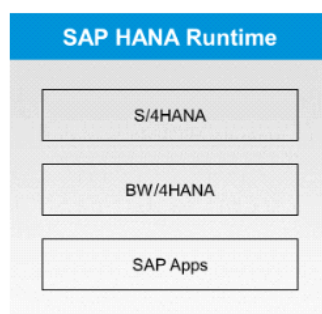
There are possibly additional licensing fees for Cold Storage (NLS/DTO).

SAP HANA. The following options are going to be covered:

- SAP HANA Runtime Edition
- SAP HANA Full Use Edition
- SAP HANA Active/Active (Read Enabled)
- SAP HANA Express Edition
- SAP Cloud Platform, SAP HANA Service

SAP HANA Runtime Edition

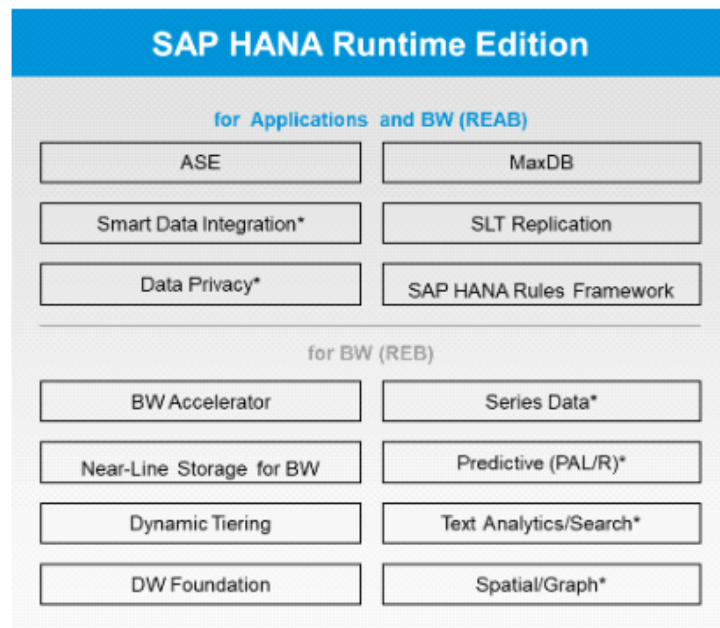
SAP HANA Runtime Edition is limited to a runtime environment for SAP Applications. An SAP Application is any application that includes a **NetWeaver Application Server**, e.g. SAP Business Warehouse (BW), SAP BW/4HANA, SAP Business Suite, SAP S/4HANA and other related products.



SAP offers two options with SAP HANA Runtime Edition:

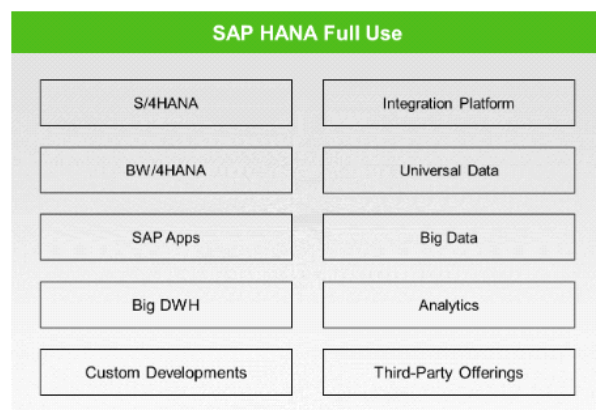
- SAP HANA Runtime Edition for SAP BW (HANA REB)
- SAP HANA Runtime Edition for Apps and SAP BW (HANA REAB), which includes all capabilities from REB, plus other SAP Apps.

The picture below shows the available features of both for these options.



SAP HANA Full Use Edition

SAP HANA Full Use Edition offers an unrestricted platform for any combination of SAP, non-SAP, custom, third-party, and hybrid applications.

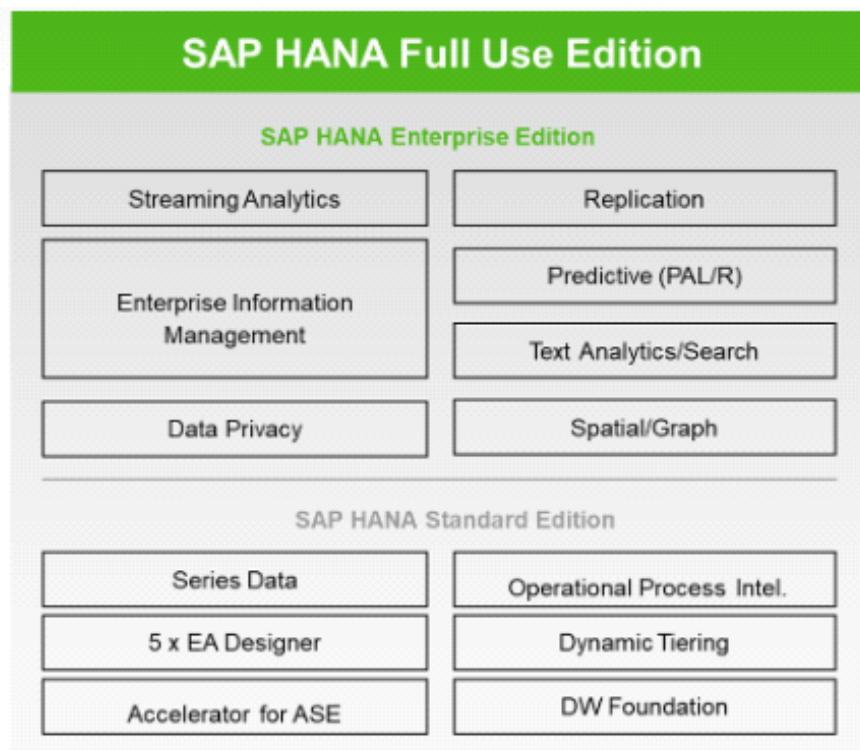


With SAP HANA Full Use Edition there are **no limitations** on data modeling, administration, creation of custom structures, and use of advanced engines via HANA Web IDE, HANA Studio (IDEs used to develop artifacts on a HANA server) or other applications. There are no limitations on loading and exporting of SAP & non-SAP data directly into and out of SAP HANA.

With the Full Use Edition it is possible to read data both from the application and database layers. **You can consume the data of the SAP HANA system whichever way you need it.**

SAP offers two versions of the SAP HANA Full Use Edition:

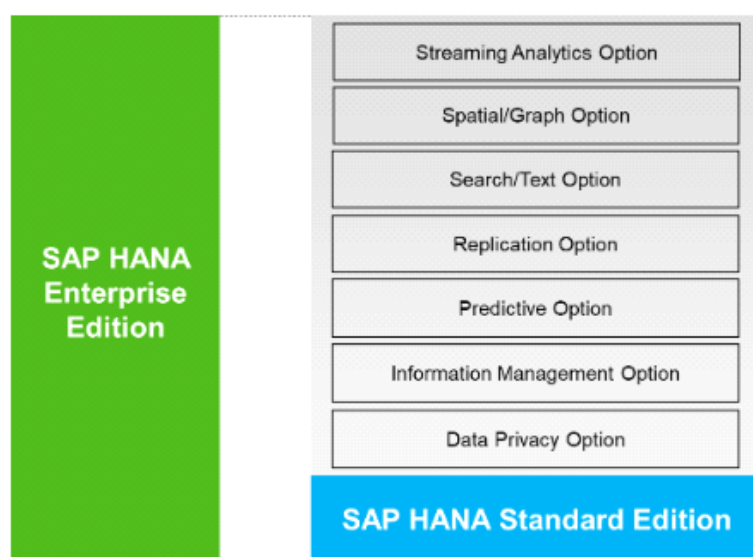
- SAP HANA Standard Edition
- SAP HANA Enterprise Edition (includes all capabilities from the Standard Edition). The picture below shows the available features for both editions.



It is also possible to acquire the Standard Edition and just add the services you need for your business. Here are the available options:

- **Data Privacy Option**, for enhanced protection of sensitive and confidential data (e.g. Data Masking);
- **Information Management Option**, for data integration, data quality management, and information stewardship;
- **Predictive Option**, for Predictive Analytics Library access, R engine, and TensorFlow integration for advanced analytics;
- **Replication Option**, for replicating data from any supported source system to the SAP HANA database;
- **Search/Text Option**, for search, text analysis, and text-mining functionality for you to gain real insights from unstructured textual data;
- **Spatial/Graph Option**, for advanced spatial and graph analytics capabilities;
- **Streaming Analytics Option**, for processing streams of events and messages in real time, allowing some or all of the data to be captured in the SAP HANA database and/or Hadoop.

Basically, if you license all available options on top of your SAP HANA Standard Edition, your SAP HANA system will have the same capabilities as the SAP HANA Enterprise Edition.



SAP HANA Runtime Edition vs Full Use Edition

Conceptually speaking SAP HANA Runtime Edition offers a limited platform, centralized only for SAP applications and SAP HANA Full Use Edition offers an unrestricted platform for all systems and distributed data in modern, hybrid environments.

The picture below provides an overview of the biggest technical differences between these two editions. For SAP HANA Runtime Edition we've included restricted (Δ) and not available (X) capabilities.

	Runtime	Full Use
Work at database level	✗	✓
Create tables directly in SAP HANA (physical & virtual)	✗	✓
Direct loading into SAP HANA tables	Δ	✓
Data export at database level	✗	✓
Data export via views	✗	✓
Use of SAP AFL functions	Δ	✓
Use of partner AFL functions	✗	✓
No differentiation between data call and application call	✗	✓
Use of XSA server for customer developments	✗	✓

In terms of functions and features, the picture below compares the difference between the two available editions.

SAP HANA Runtime Edition		SAP HANA Full Use Edition	
for Applications and BW (REAB)		SAP HANA Enterprise Edition	
ASE	MaxDB	Streaming Analytics	Replication
Smart Data Integration*	SLT Replication	Enterprise Information Management	Predictive (PAL/R)
Data Privacy*	SAP HANA Rules Framework		Text Analytics/Search
for BW (REB)		Data Privacy	Spatial/Graph
BW Accelerator	Series Data*	SAP HANA Standard Edition	
Near-Line Storage for BW	Predictive (PAL/R)*	Series Data	Operational Process Intel.
Dynamic Tiering	Text Analytics/Search*	5 x EA Designer	Dynamic Tiering
DW Foundation	Spatial/Graph*	Accelerator for ASE	DW Foundation

To sum up, the decision of choosing which edition is best for you depends on whether you want to leverage SAP Applications, or you want to use the full power of the SAP HANA platform.

SAP HANA Active/Active (Read Enabled)

SAP HANA Active/Active (Read Enabled) is a solution that targets resiliency and better performance of your SAP HANA productive environment. With this option you can offload intensive read operations to the secondary system, freeing up more computational power to be used on the primary system for read and write operations.

As data is continuously being replicated from the primary to the secondary system using either synchronous or asynchronous communication protocols, you can leverage the secondary system to offset read-intensive workloads from the primary system. With SAP HANA Active/Active (Read Enabled) you can gain usage rights to access secondary system for productive read-enabled operation, the utilization of the underlying hardware can be increased because the workloads can be much more balanced, which also improves the performance of the operations on the primary system. Latency can also be reduced as read intensive users can now be located next to the secondary data center and there is no impact on your Recovery Time Objective (RTO) and Recovery Point Objective (RPO).

Without SAP HANA Active/Active (Read Enabled), the secondary system can't be used for any operation, which means it's only idle capacity for High Availability and Disaster Recovery purposes.

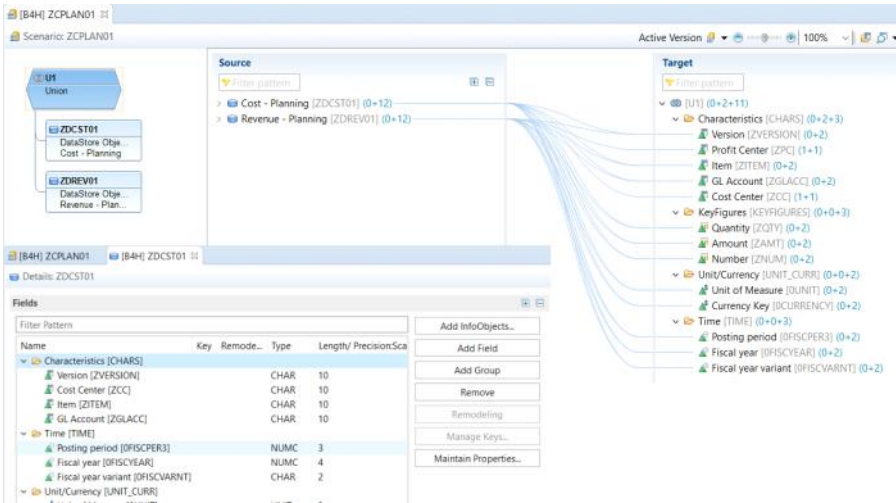
This option can either be used by SAP HANA Runtime and Full Use Editions as you can check below. Only SAP HANA 2.0 works with this option.

Active/Active read-enabled		Active/Active read-enabled	
SAP HANA Runtime Edition		SAP HANA Full Use Edition	
for Applications and BW (REAB)		SAP HANA Enterprise Edition	
ASE	MaxDB	Streaming Analytics	Replication
Smart Data Integration*	SLT Replication	Enterprise Information Management	Predictive (PAL/R)
Data Privacy*	SAP HANA Rules Framework	Data Privacy	Text Analytics/Search
for BW (REB)		SAP HANA Standard Edition	
BW Accelerator	Series Data*	Series Data	Operational Process Intel.
Near-Line Storage for BW	Predictive (PAL/R)*	5 x EA Designer	Dynamic Tiering
Dynamic Tiering	Text Analytics/Search*	Accelerator for ASE	DW Foundation
DW Foundation	Spatial/Graph*		

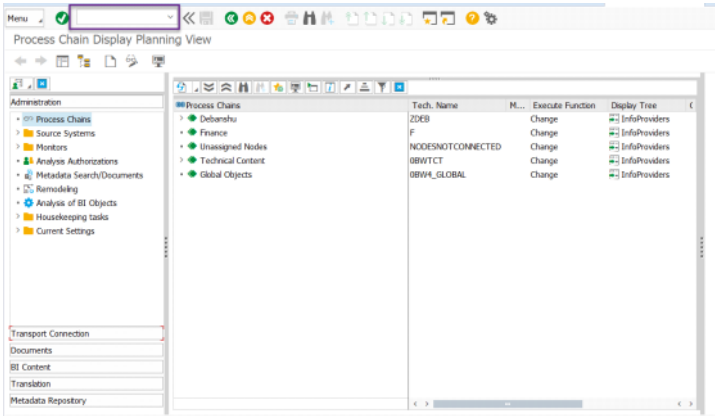
Tools	Tool	Tasks
	BW Modeling Tools in Eclipse	<p>Data modeling by defining and editing objects, in particular InfoProviders</p> <p>Data Acquisition</p> <p>Definition of analytical queries as the basis for data analysis</p>
	SAP BW4HANA Cockpit	Administrative and operational tasks, such as defining and monitoring process chains or InfoProvider administration
	Data Warehousing Workbench	Administrative and operational tasks, such as content activation and transporting SAP BW4HANA objects

Eclipse

- Completely Eclipse-based Modeling for BW4HANA Infoproviders.



- Tcode based navigation within Eclipse wherever necessary.



- Eclipse based BW Query creation.

The screenshot shows the Hadoop IDE interface. The top menu bar includes File, Edit, View, Navigate, Project, Run, Window, and Help. The top toolbar contains icons for file operations and execution. The main window is titled "hadoopstudio - ZDEB_POC_ZCV_MATERIA..." and displays a SQL query in the editor:

```

SELECT * FROM ZDEB_POC_ZCV_MATERIA_DIM B4H@HNA (BW4U5ER)

```

The left sidebar shows the "Systems" tree with the following structure:

- B4H@HNA (BW4U5ER)
 - HNA@HNA (BW4U5ER)

The right sidebar shows the "Scenario" tree with the following structure:

- Join
 - Union
 - Project
 - Aggr
 - Rank

The main window displays the execution plan for the query. The plan is as follows:

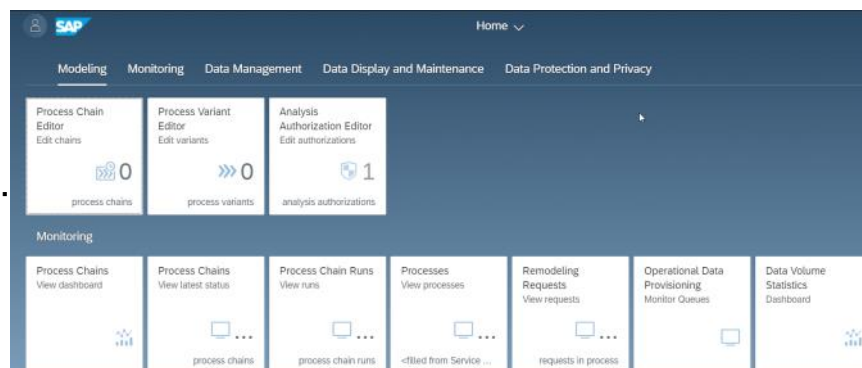
```

graph TD
    Semantic4[Semantic4] --> Projection[Projection]
    Projection --> Join1[Join_1]
    Join1 --> Join2[Join_2]
    Join2 --> Projection1[Projection_1]
    Projection1 --> MAIRA[MAIRA]
    Projection1 --> STA_MARA[STA_MARA]
    Projection1 --> STA_MARA1[STA_MARA]
    Projection1 --> Projection1_1[Projection_1]

```

The execution plan shows a sequence of operations: Semantic4, Projection, Join_1, Join_2, Projection_1, and finally MAIRA, STA_MARA, and Projection_1_1.

- BW4 Cockpit based modeling, data maintenance and monitoring.







- HANA Studio
is a plugin so if you install HANA Studio, you'll get bundle:
Eclipse + HANA Studio Plugin

Available Software

Check the items that you wish to install.

Work with: **HANA Tools - Latest - <https://tools.hana.ondemand.com/latest>**

type filter text



Name	Version
> <input type="checkbox"/>  ABAP Development Tools	
> <input type="checkbox"/>  Modeling Tools for SAP BW/4HANA and SAP BW powered	
> <input type="checkbox"/>  SAP Cloud Business Application Tools	
> <input type="checkbox"/>  SAP HANA Tools	

BW4H - Eclipse Shortcut

Operations	Shortcuts
Open SAP GUI	Ctrl+6
Create a new object	Ctrl+N
Activate an object	Ctrl+F3
Validate an Object	Ctrl+F2
Maximize\Restore tab	Ctrl+M
Search\Find object	Ctrl+H
Open Resource	Ctrl+Shift+R
Open an Object	Ctrl+Shift+D
Toggle tab	Ctrl+F7
Toggle perspective	Ctrl+F8
Toggle between Open objects	Ctrl+E
Move across open objects	Alt+(→ or ←)
Close current Object	Ctrl+(F4 or W)
Close all open objects	Ctrl+Shift+(F4 or W)
Get Where used list	Ctrl+F5
Undo	Ctrl+Z
Redo	Ctrl+Y
Quick Access	Ctrl+3
Open views	Alt+Shift+Q
Show error logs	Alt+Shift+Q+L
Refresh data preview	Ctrl+Shift+P


You can get the list of available shortcuts in eclipse using the command Ctrl+Shift+L.

BW4 Cockpit

 BW Cockpit B4H | 100 Home ▾


Modeling Monitoring Data Management Data Display and Maintenance Data Protection and Privacy

Process Chain Editor
Edit chains

 0


process chains

Process Variant Editor
Edit variants

 0

process variants


Analysis Authorization Editor
Edit authorizations

 1


analysis authorizations

Monitoring

Process Chains
View dashboard




Process Chains
View latest status

 0


process chains

Process Chain Runs
View runs

 0


process chain runs

Processes
View processes

 0


processes, last 24h

Remodeling Requests
View requests


 0

requests in process


Operational Data Provisioning
Monitor Queues



Data Volume Statistics
Dashboard



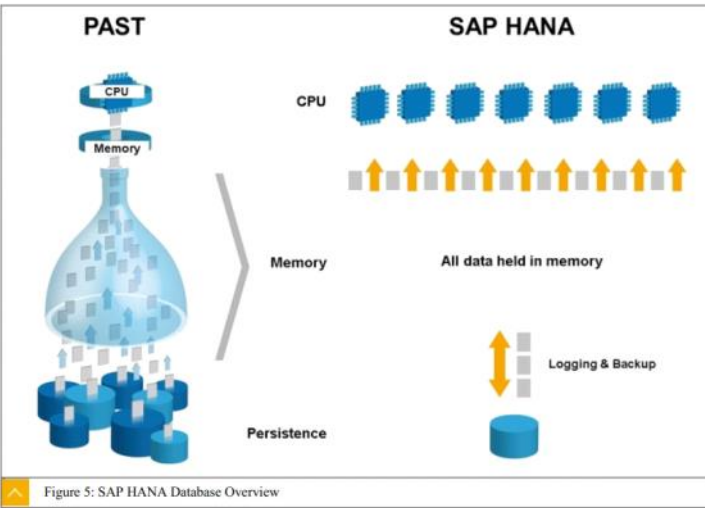
Data Selection Statistics
Dashboard



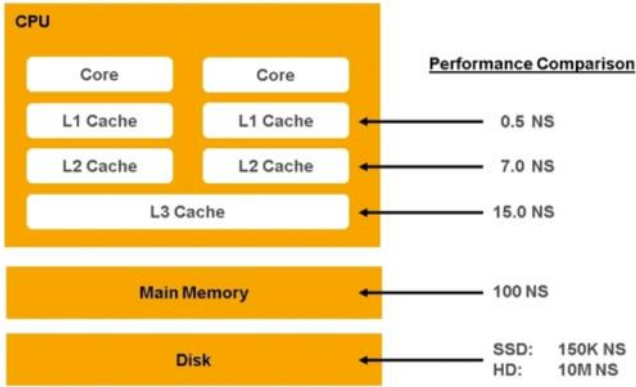
Salient features of SAP HANA as a DB

Evolution of SAP HANA

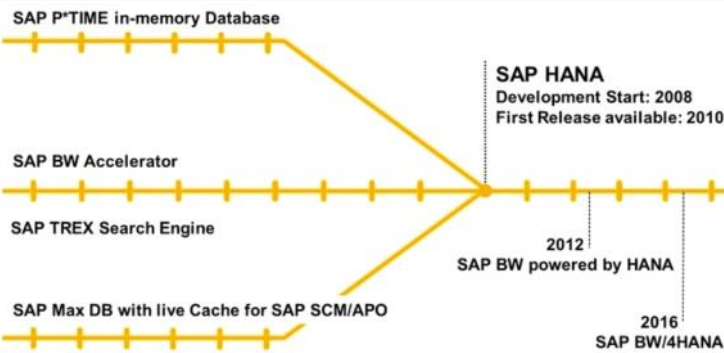
Evolution of SAP HANA Landscapes



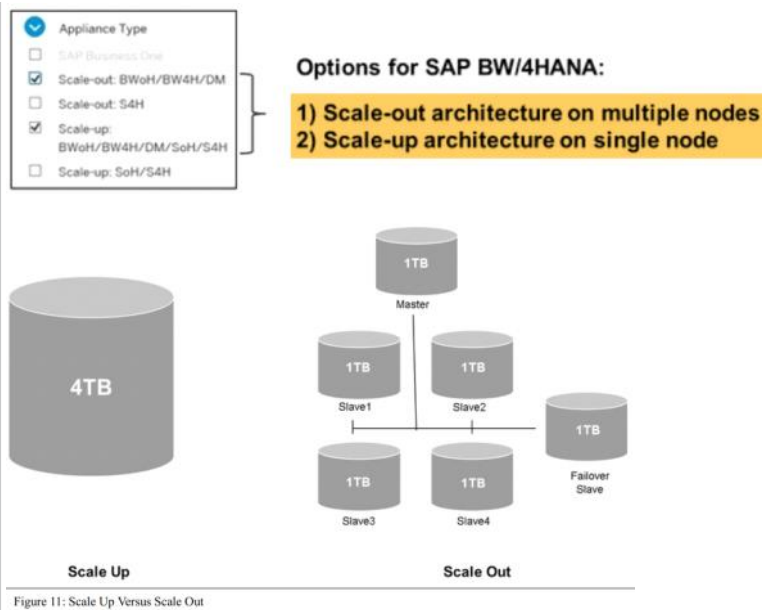
In SAP HANA, you can store data and retrieve it in response to structured queries. Unlike traditional databases, SAP HANA does this by accessing main memory and not disk, yielding much faster data retrieval times. This means that all relevant data for an application is held in memory and the application reads and writes directly to the memory only. Changes to in-memory data are logged in real time in the same way as traditional databases. At recurrent so-called save points, all new changes are written back to the persistence layer asynchronously. As a result, in a case of failure, the system can be restarted to any point in time without loss of data.



Evolution of HANA & BW4HANA



- **SAP S/4HANA**
SAP's strategic ERP solution
Available since 02/2015
- **SAP BW/4HANA**
SAP's strategic Data Warehousing solution
Available since 09/2016

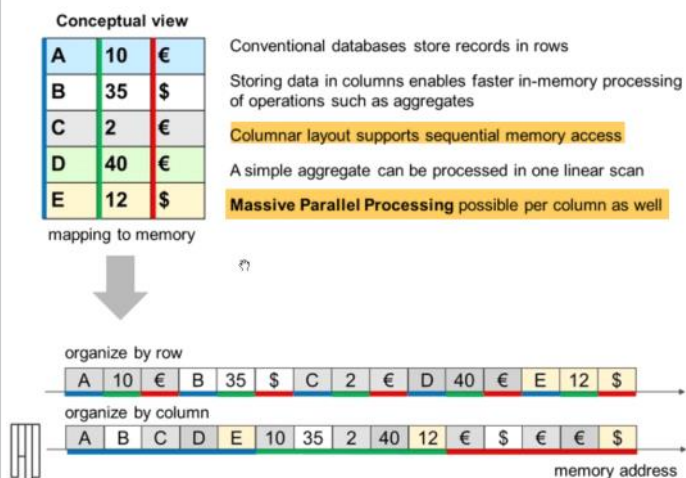


Recommended: Scale-up for BW.

The three main concepts of the SAP HANA database are as follows:

1. Column Store and Row Store
2. Compression of the Column Store
3. Insert only on Delta & Delta Merge of the Column Store

Column and Row Store:



Row Vs Column Store:

Row-based store:

- Mainly distinct values in the source database
→ Leads to low compression rate
- All the columns of the table are relevant.
- No aggregation or search required
- Table has a minor number of records
→ Some system tables are stored in the row-store

Column-based store:

- Large number of rows, where column based operations will be processed
- Large number of columns
- Very good suitability for analytical applications (read access)

If you want to report on line items only, that is, on all the columns of a single record of a table, then the row store is more suitable. This is because reconstructing the complete row is one of the most expensive operations for a column-based table. Typical examples are customizing tables or log tables.

If, in a table, you want to store huge amounts of data that should be aggregated and analyzed, then column-based storage is more suitable. Columnar table layouts enable fast column scans because they can sequentially scan the memory, allowing, for example, on-the-fly calculations of aggregates. All tables of BW data models (all tables of the /BIC/-namespace) are managed in this way.

- When an SAP system is migrated to SAP HANA, the SAP tables are automatically migrated into the storage type that is best suited. This logic is defined by SAP.
- The vast majority (>90%) of all tables is held in the Column Store.
- Tables of SAP BW/4HANA data models (e.g., /BIC/ A*, P*) are all in the column store.
- This information can be accessed in SAP HANA Studio (*Catalog > Open Definition > Runtime Information*) or via the ABAP Data Dictionary of SAP BW/4HANA in the technical settings of each table (tr. SE13).

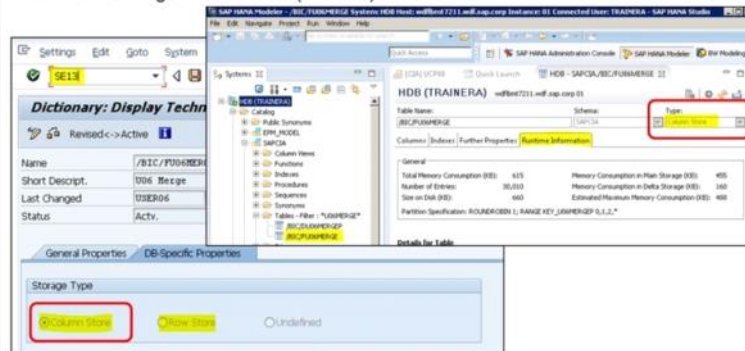


Figure 15: Column and Row Store Tables in SAP Systems

Note:

The actual ratio of column store versus row store in your individual system can be derived from following tables: SYS.CS_TABLES_ or SYS.RS_TABLES_.

For example, in SAP HANA studio, SELECT COUNT(*) FROM "SYS"."CS_TABLES_" versus SELECT COUNT(*) FROM "SYS"."RS_TABLES_" (requires read-authorization to database schema SYS).

Example:

```
SELECT 'COLUMN TABLES', COUNT(DISTINCT("TABLE_NAME"))
FROM SYS.M_CS_TABLES

UNION

SELECT 'ROW TABLES', COUNT(DISTINCT("TABLE_NAME"))
FROM SYS.M_RS_TABLES
```

	'COLUMN TABLES'	COUNT(DISTINCT (TABLE_NAME))
1	COLUMN TABLES	29,766
2	ROW TABLES	1,897

Compression of Column Store:

- SAP HANA manages column store tables with an own dictionary

- This dictionary uses data-driven fixed-length bit encodings

→ Operations are processed directly on compressed data using integers

→ More data is managed in cache, access to main memory is reduced

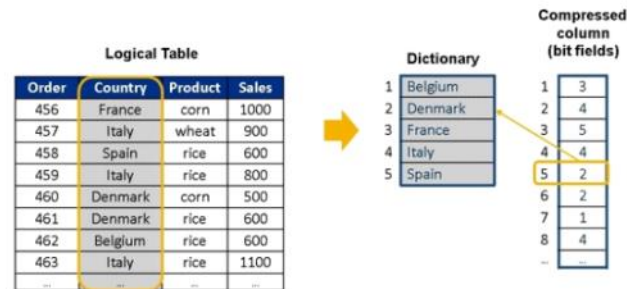
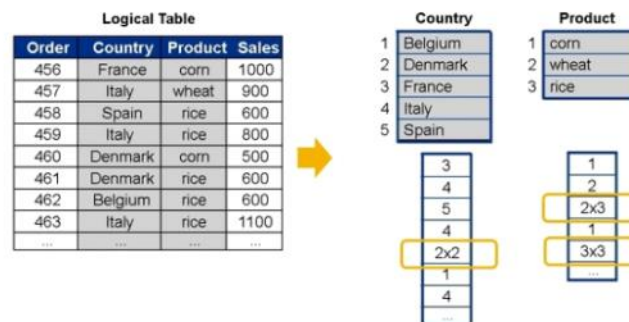


Figure 16: Compression of Column Store Tables 1/2

- Columns of SAP HANA Column Store are sorted normally

→ Option to compress these repeated values in column memory even more

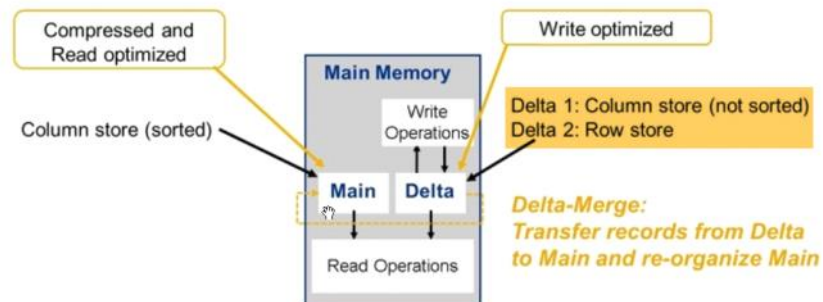
→ More data can be processed in cache



Insert only on Delta and Delta Merge of the Column Store

SAP HANA Column Store tables: Storage Separation in Main and Delta Storage

→ Enables **high compression** and **high write performance** at the same time



Read operations

- from both main & delta storage

Write operations

- Only in delta storage
- The update is performed by inserting

→ Completely transparent for the BW/4HANA application,
i.e. read operations always provide correct results

If the delta reaches a certain size, it merges back into the main store and the complete dictionary is sorted.

