E-3

Information and Education for the SAP®-Community

Converged Infrastructure

Jürgen Renz and Jens Peter Gotter of Dell explain converged infrastructure: what does the SAP community need to keep in mind with regard to a Software Defined Datacenter for ECC 6.0 and S/4? Where does Hana belong – in the private, public or hybrid cloud? The digital process of transformation has begun. From Page 44

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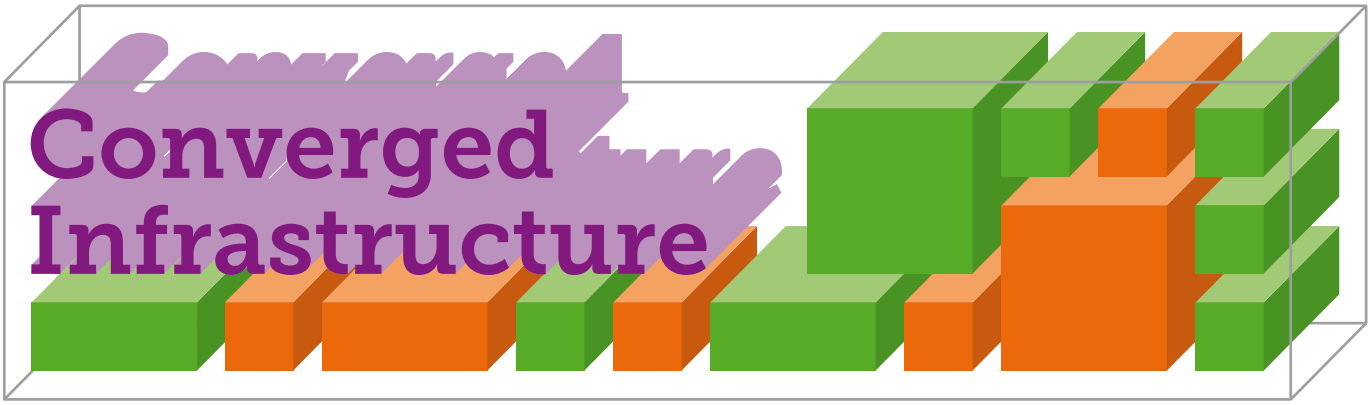
A Software Defined Datacenter is the basis for digital transformation and optimization



The digital processes of transformation have only just begun. Industry and trade 4.0 are in their starting phase. The Internet of Things is becoming a reality. This makes C-level management dependent on maximum flexibility – until reliable megatrends emerge from the different elements of hype. Dell's answer to this: Convergent Infrastructures provide this needed flexibility. Jürgen Renz and Jens Peter Gotter of Dell discussed this with E-3 Chief Editor, Peter M. Färbinger.

Flexibility is necessary in order to not be flushed away by the digital tsunami – to use the Gartner analysts' term for the digital transformation. One response to the transformation processes that are coming up is converged infrastructure and software-defined datacenters. In an SAP environment, IT flexibility has an impact on the CCC manager and IT manager respectively, and sometimes perhaps also the CIO. Cost-reduction pleases the CFO. Is more flexibility, accompanied by reduced costs, a task for the team? Who drives this? Who executes this? Jürgen Renz, General Manager and Executive Director at Dell in Germany notes: "As I see it, greater flexibility is a requirement that the business and the specialist departments have: they take this matter up with the Head of CCC and the CIO. For me, these are the principal driving forces. In cooperation with the CFO, whose focus is on the costs, it is ultimately the Head of IT and the CIO that act upon these requirements". Jens Peter Gotter, Director Global SAP Center of Excellence at Dell, adds: "Cost-cuts are not only the concerns of the board members responsible for finance. Nowadays, the CIOs are also given strict budget requirements, and they must reduce the TCO. Flexibility can also be considered in a differentiated way. Flexibility through a convergent infrastructure is also driven by the CIO organization, leading to cost-cuts. Flexibility with regard to the business side is converted into reality in the scaleability of the SAP system and is likewise driven by the CIO organization. Cost savings through activities in the Business Process Reengineering area are usually effected through the Line of Business – supported by the IT organization". In discussion with E-3 Magazine, Jürgen Renz makes the following observation on this: "At present, however, we're also seeing the trend whereby IT management is very much aware of these connections and is also able to motivate itself very strongly in this regard."

The transformation

However, flexibility cannot be the sole objective of a converged infrastructure. The nature of things is that it is also about a quality improvement for the organization of structures and activity sequences. The Business Process Redesign directed towards a Real-Time Enterprise – SAP's name for the next stage of ERP evolution – is important; quality improvement also influences the TCO referred to above. Change Management of a Converged Infrastructure needs to be delivering flexibility and savings. Is it possible to do both, or should one initially be flexible and then attain low-cost? "No, it's not a case of needing to do one and only then the other", as Dell manager Renz puts it. "On the contrary: it is through increased flexibility that – after an initial investment – substantial savings can usually also be achieved". His colleague Jens Peter Gotter notes: "Increased flexibility, improved quality and a reduction in costs can be achieved at the same time. Examples of this are convergent Infrastructures and SLA-based support-models".

"If we consider the SAP world of ten years ago, particularly in Germany, almost every SAP system ran on proprietary architectures", Jens Peter Gotter explains. "In addition, numerous solutions existed as ‚islands', so to speak, each of which respectively made possible a partial automation of SAP. Yet at that time there was not yet a concept that permeated everything". By now, a high degree of hardware-standardization has been reached, offering the basis for comprehensively rendering software more flexible. In future, this element will be significantly expanded, especially regarding flexibility and pace. "It's also foreseeable that, via templates and automation processes on applications, this process can be structured in a substantially more efficient way", Gotter is convinced. His Dell colleague Jürgen Renz points out: "Ten years ago, typical scenarios for provision of a solution in the SAP environment were characterized by a great many manual interventions on proprietary systems. Today, the trend towards a standardized IT entails a root-and-branch automation and thereby of course also deployment processes that used to demand weeks and days and are now dealt with in just a few minutes or seconds".

Flexibility for established SAP customers spans the whole life cycle: "Both when considering new workloads through our SAP consultancy and when financing through Dell Financial Services, where we make a pay-as-you-grow-model possible, this flexibility is there to be had", Jürgen Renz observes. Naturally, Dell likewise offers flexible systems in the core of the infrastructure. "Notably in the area of hyperconverged servers, software-defined storage and open networking, we also offer

very innovative, flexible solutions to established customers", Renz says, explaining Dell's approach. Jens Peter Gotter adds that more flexibility can be reached on two levels: firstly, through convergent infrastructure. An infrastructure can change over the course of time. Examples of this are temporary requirements for development environments and test environments used for short-term projects. Further examples are mergers and takeovers, including spin-offs. And ultimately the normal growth of the business. "With the help of the convergent infrastructure it will be possible to dynamically adapt the size of the landscape to match the current requirements", notes Dell manager Gotter. A side-effect is that the costs for the infrastructure are adapted to the actual demand. A flexible adaptation of the landscape can be attained through hyperconverged servers, software-defined storage, open networks and corresponding Dell services. Secondly, through support services. Here Gotter explains: "Support can be made available both at the infrastructure-components level and at the applications level, for example end-user support or break-fix support. Instead of offering support on a fixed FTE basis, Dell's support-model is based on SLAs, making the costs flexible".

Hyperconverged systems

"Hyperconverged systems are solutions that combine within themselves the classic IT stack consisting of storage, server and network, while providing a compact structure" – this is how Jürgen Renz describes a megatrend from the digital transformation processes. Hyperconverged systems serves as reproducible and largely identical building blocks that enable customers to scale on an almost linear basis. For an SAP established customer, the opportunity is there to attain more homogeneous, stable operation. Simultaneously this mode of operation can consume its workload in portionable sizes, also having the security that everything is internally coordinated. "This way, complex certification matrices are substantially simplified", Renz knows from everyday practice. His colleague Jens Peter Gotter adds that, depending on the customer size and the operating model, hyperconverged systems can constitute a better-optimized opportunity for using SAP. "We take it as the basis that these modern solutions will make up a significant share of future SAP installations – particularly on migration projects with regard to Unix solutions and mainframe solutions. The reason is that these hyperconverged systems are very easy to administer".

Jürgen Renz, General Manager and Executive Director at Dell in Germany (left) and Jens Peter Gotter, Director Global SAP Center of Excellence at Dell (right).

As an ‚interim summary', so to speak, Jürgen Renz notes: "In the early days of R/3, the subject of provision of SAP infrastructure had no role to play, due to our clear focus on Intel x86, because the systems were rolled out in Unix worlds. In the course of x86's evolution, the topic of ECC 6.0 – and of course S/4 with Hana – has advanced ever more prominently into focus. It's notably the uniform platform at S/4 that helps our customers and us to concentrate on key issues".

S/4 is coming

"S/4 is already relevant for Dell", Jürgen Renz explains, "because with our Hana Value-Identification Services we inform the customer about the advantages of switching to S/4". However, to date only Simple Finance (S/4 Finance) is available and Simple Logistics (S/4 Logistics) is scheduled to follow by the end of the year. "Our belief is that, as a result, the take-up of S/4 will be increased", Renz emphasizes. Dell manager Gotter stresses that S/4 is not only an ECC running on Hana, but that it is also the next generation of an ERP system of SAP: "We believe that, taking the long-term view, the majority of the improvements render S/4 necessary". As a result, Dell thinks that, over the next 10 to 15 years, a high percentage of the SAP systems will be brought onto S/4. "We use an SAP RDS for the migration of BW onto Hana, and Dell is also familiar with SAP's activate methodology for bringing customers from ECC to S/4", Jens Peter Gotter adds. S/4 can be made available, either on the spot or in the cloud. Dell has computing-center capacity in-house (currently in the USA, the UK and Ireland) and can make S/4 available via the Dell Cloud.

Cloud – OK, but which one?

"Cloud Computing is one possible path to greater IT flexibility but certainly not the only one", as Jens Peter Gotter sees it. "Many customers today boost the flexibility of their IT with an on-premise cloud or private cloud, which they expand according to requirements. That's why hybrid clouds are also the logical next step". Here Jürgen Renz directs attention to security: "As part of this, the topic of data security is naturally one that always has to be assessed; this in turn must lead to use of hybrid models to an even greater degree. Accordingly, the non-critical topics are compared against market status and market offerings are used; by contrast, for sensitive topics the on-premise cloud can bring its great merits into play". Yet for Gotter as a manager, it is important that Dell leave the choice with the customer: "We very thoroughly analyse with the customers which path provides their best option. To that extent, of course we bring our customers into the cloud if that's where the greatest added-value is to be had. Yet whether this is to be an off-premise, on-premise or hybrid cloud, depends on the customer".

Can there be a Hana Enterprise Cloud (HEC) from Dell? "Yes, a Dell HEC is part of the plans for SAP Practice at Dell", explains the Director Global Center of Excellence, Jens Peter Gotter. "We are currently in the SAP certification process. This solution will use the advantages of Dell's existing Dedicated Cloud offerings". In discussion with E-3 Chief Editor Färbinger, Jürgen Renz adds: "Hana Enterprise Cloud at Dell will be a holistic cloud-capable managed-service offering, including all necessary components for the support of an Enterprise SAP landscape."

But where will Dell place the Hana platform? In the computing center for established SAP customers or in the cloud used for cloud computing? "In the past, certainly, customers have initially placed SAP in their own computing center, and thus in many instances Hana will initially be deployed there too", Jürgen Renz notes, based on his conversations with customers, adding the following: "Particularly for a step-by-step modernization, it is purposeful not to change all parameters simultanesously. Conversely, Hana has undergone a formidable development and by now it is deployable on a flexible basis. That's why I also see the deployment of Hana as being increasingly in off-premise cloud solutions".

Hana is ready

How are established SAP customers to evaluate their Hana platform? Sizing for SAP BW and ERP? Dell has developed a road-map so as to accompany the customers from the start (evaluation) through to the end (conception, implementation, support) on their path into the world of Hana. There are workshops for customer ‚education' regarding what Hana is and what value categories Hana can fulfil. A Hana migration is possible with Dell's ZeroImpact methodology for minimized business downtime. Among other elements added to this offering is support, with a broad-based offering of managed services for Hana, such as DBA, SAP base and security, involving a number of variable price-models. We wish to always offer our customers outstanding performance at a fair price", was how Jens Peter Gotter summarized it in the E-3 discussion. "Each time anew, this challenges us to develop the best possible Hana platform and optimize it sustainably for our customers' benefit. Over the past years we have also expanded substantially our offering of support and service in the Hana environment".

Open source & software defined

Hana needs Linux, and for cloud computing SAP is strongly directing its efforts at OpenStack – Open Source has made its entrance into the SAP community: "Our customers operate SAP at the heart of their IT operations, i.e. where the activity sequences critical to the company take place", Jürgen Renz notes. "That is why for our customers the take-up of OpenStack in this area is traditionally a slower process than for other workloads. Yet OpenStack's significance is growing all the time – scarcely any company today can afford not to engage with it. Dell was active in this area at a very early stage". Alongside the infrastructure and corresponding services, Dell's Red Hat Cloud Reference Architecture also includes further components, such as SDS (software-defined storage) and SDN (software-defined networking). "In comparative terms, it's primarily with regard to SDN technologies that we have advanced a long way; here, jointly with partners, we are offering a wide spectrum of various solutions with a complementary relationship to OpenStack ", Jens Peter Gotter explains.

"The software-defined datacenter is highly relevant for established SAP customers: within this, the promise made by a software-defined datacenter – greater flexibility while maintaining low costs – covers exactly those wishes that our customers have here", says Jürgen Renz. Dell covers all areas of software-defined. "Alongside the classic software-defined server, one that many customers have already taken up in virtualized form, we are also highly active in the area of software-defined networking": Dell manager Gotter points out, describing the current situation. According to Gartner, Dell is indeed even one of the firms that have gone furthest. Jens Peter Gotter adds: "Here we provide our customers with the freedom to deploy any network OS, to abstract the whole network via a control plane and also to deploy virtualized networks like NSX." Lately, software-defined storage has enormously grown in significance. Thus everything seems to be prepared for a converged infrastructure on the SAP scene.

More flexible and less costly

Almost everything is becoming software

SAP application users now see themselves presented with an ever-growing list of requirements. The challenge is to improve the efficiency and performance of the mission-critical applications and to introduce new solutions. What is needed for this is a consistent use of new technologies, enabling IT to become the driving force in the optimization of business models and the introduction of new business processes.

By Roland Kunz and Clemens Zerbe, Dell

In many organizations, the SAP environments that have grown over the years form part of the corporate IT's core. Here, even today, in many instances the principle applied is that of changing as little as possible on proven systems. A look at the equipment and the operation of the SAP systems makes clear that usually these operate on classic dedicated servers and use storage systems connected via fibre channel. Jointly with the server provider, the application users determine how many SAPS (SAP Application Performance Standard) are needed, based on SAP key figures on users, overviews of quantities, and benchmarks; they also establish how much RAM and CPU, hard-disk and network-card resources a server needs to be equipped with, to be able to deal with the envisaged workloads promptly. Companies have virtualized the application servers; in the discussions about establishing the dimensions suitably, the issue at hand was that of 2-tier or 3-tier architectures. Typical SAP tasks - such as producing SAP clones for test, development and production – were partly worked through on an automated basis with scripts, but at present a start-to-finish automation, ideally one instigated by the relevant specialist department, is rather the exception.

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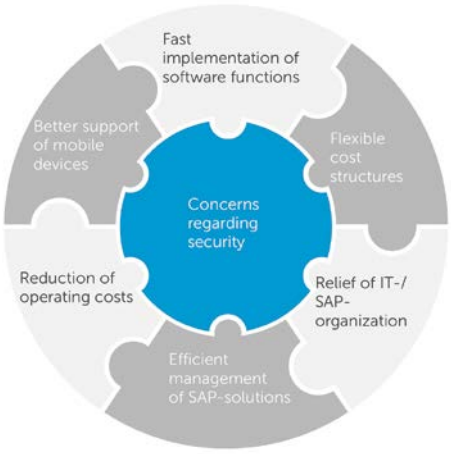
Hyperconvergent systems

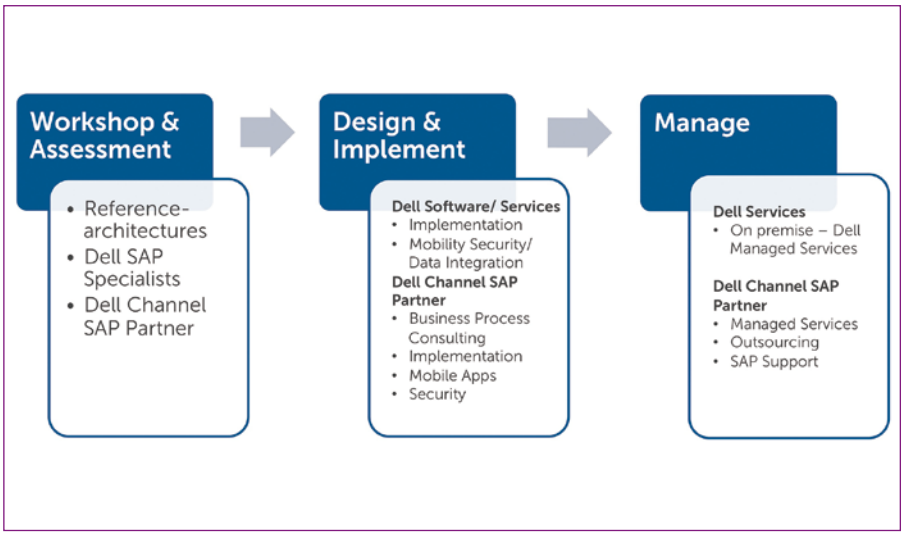
At the same time, new architectures and technologies present the case for them to be put into the computing centers, promising simpler and more efficient IT operations. In the SAP solutions environment, an important role is placed by hyperconvergent systems; inside one housing, they bring together the server, storage systems, network components and virtualization software. Usually the solutions in the network area support at least 10 gigabit of Ethernet, and sometimes (rarely) also fibre channel. Here the first challenge is to change configurations that have been customary up to that moment. Specifically, it is about abandoning classic storage-subsystems and switching to a local storage. It is important for companies to be able to also use hyper-convergent solutions for the familiar procedures of using SAP – especially cloning, back-up and snapshot integration, made possible by the classic storage systems. The advantages are reduced total cost of ownership, simplified operation and greater flexibility. The typical example of a hyper-convergent system is the Dell PowerEdge FX.

Software-defined datacenter

The architecture of a software-defined datacenter goes yet another step. It is of-



These days, SAP application users are confronted by a whole range of challenges.



From the workshop through to operation: achieving success by using tried and tested methods.

ten hyper-convergent systems that form the basis for this. Here, in addition to widespread server-virtualization, storage is also defined solely by software. Examples of such a solution are vSAN from VMWare with the Dell vSAN Ready Nodes, the Nutanix architecture, as is used on the Dell XC systems, or also solutions based on Microsoft Storage Spaces. Yet the network components are still lacking for a computing center defined completely by software. Here three approaches have established themselves in the market:

- Controller-based administration, in which all switches in the network are orchestrated through a central component, for instance with the help of the openflow communication protocol.
- The freedom to choose the operating system on the network components. Within this, switches are reduced to the pure hardware, onto which an application user then installs their preferred network operating system.
- Overlay networks that place a virtual network over classical networks. An example of this is the VMware NSX, integrated into the hypervisor, in which all structures and mechanisms of the network are realized in the software.

What is relevant for SAP operation is in essence the provision of sufficient bandwidth. This requirement can be implemented by means of all three variations.

Software-Defined Anything – and thus the consistent separation of hardware and software on the basis of open standards – offers extensive options in terms of the design and operation of new solutions. Within this, companies benefit from greater flexibility and a lower commitment of resources in the implementation phase. Optimally coordinated to suit one another, servers, software-defined storage und software-defined networking act as the central components for building up a high-performance, efficient software-defined datacenter that is secure for the future. The individual components of the solution are already matured and tested out, but their interplay is still in the phase of development and evaluation; application users are in the process of finding out which variations are suitable for certain application scenarios. In this, companies are dependent on the consultancy and support of partners such as Dell, who are able to cover the whole portfolio of solutions in all its details.

Making new SAP environments available

The typical tasks in an SAP system landscape also include the rapid provision of new environments or also the cloning of an existing environment. Even at the stage of providing the basic infrastructure, application users can gain a great deal of flexibility and time by deploying a solution such as the Dell Active System Manager. These enable even extensive environments to be rolled out on the basis of templates – for instance an SAP system consisting of a non-virtualized database server under Windows, with Microsoft SQL Server, virtualized web-servers and several application servers under Linux. Then, on the basis of pools, these systems are distributed automatically to suitable free resources and the storage requirement is adapted accordingly. For further automation into the SAP system, the familiar implementation tools that can then be used, so that it is unnecessary to disrupt operations entirely.

A hyper-convergent infrastructure solution

Dell PowerEdge FX2 brings together on a modular platform the elements of blades and rack servers, including the storage components and network components, so as to form an easy-to-administer, scaleable infrastructure solution. This is placed in a housing comprised of two units of height; via shared storage components and network components, this offers space for up to six PowerEdge server boards and simultaneously has management functionalities integrated in it. Due to the jointly-used components and functions, such as cooling, electricity supply, switches and PCIe extension sockets, companies can use the FX2 housing for numerous server combinations or respectively mass-storage combinations; they thereby benefit from more efficiency in the use of IT resources. The modular architecture makes good scaling possible; accordingly, once configured, solutions in the SAP environment can quickly and easily be adapted to new requirements.

Support on the spot

Walldorf's commitment

In May, Dell opened its Global SAP Center of Excellence in Walldorf. With the new office complex and a computing center, Dell is nailing its flag to the masthead and reacting to increasing demand for its solutions in the SAP market.

By Jens Peter (JP) Gotter, Dell

SAP's Partner Port in Walldorf is where all the threads come together. This is where Dell coordinates its global activities based around the whole spectrum of SAP's solutions that companies deploy on their PowerEdge servers certified by SAP. The starting point for this is the Global SAP Center of Excellence, in operation since May. This steers all the company's SAP-related sales activities, provides support to teams of employees and indeed also conducts pre-sales and sales activities. The consultants belonging to the Global SAP Center deliver customer care worldwide to the strategic clients on all technical and organizational matters. An important prerequisite for providing optimum support to the companies is physical proximity to SAP's headquarters. This is highly advantageous in terms of coordination and communication. This is how the direct link to SAP's development department is ensured. Added to this are the contacts to other partner companies also based at the Partner Port – e.g. Suse, Red Hat, VMware, Intel, SGI and Accenture. In almost all SAP application scenarios, components of solutions made available by several solution-providers are put to use – the earlier that these are coordinated with one another and are tested in terms of their interactions, the better it is for the SAP customers: as a result, there is a reduced resource commitment involved in integration on the spot when a specific solution scenario is being implemented. Rapid and close coordination with SAP is the responsibility of a Global Technical Alliance Manager at Dell. He establishes the interface with the SAP development and thus knows the precise roadmaps of the products at a very early stage – in both directions. In turn, this knowledge flows directly into Dell's SAP-based solutions. What is important at this stage is not solely the input from SAP but also that of other strategic hardware and software partners from the SAP "ecosystem". When undertaking project management and implementation of solutions, both for companies operating internationally and also for the typical small-to-medium-sized enterprise, the Global SAP Center of Excellence pursues a three-staged approach. There are Subject Matter Experts at country-level, Enterprise Technologists at regional level and Global SAP Enterprise Solution Consultants. If Dell launches a new SAP-related solution on the market, it is initially the pre-sales team that talks with interested customers, drawing together first experience, in terms of proof of concepts and also in subsequent productive implementations. Here the Global SAP Center of Excellence is also responsible for "field engagement" or respectively for training and tuition in a broader sense, thereby guaranteeing the global transfer of know-how – both within Dell and also to partners. Through engaging with the customer on the spot, the staff get involved in numerous exciting projects. This knowledge flows back into the Dell organization – firstly in the form of best practice and secondly into new products and solutions. The Global SAP Center of Excellence operates as a think-tank that is focussed 100 per cent on SAP. It is also here that the global strands of activity are drawn together for Cloud, Big Data, IoT and Security. Alongside the worldwide cooperation of all SAP-related activities, the company is also extending its cooperation with local partners. SAP projects generally and Hana projects specifically constitute import growth areas for Dell in the German-speaking countries; as a result, the company is strengthening the joint implementation of projects in which partners bring to bear their experience specific to particular business sectors and their SAP know-how. In this context, the target group is SMEs from all business sectors, among whom Dell is traditionally strongly represented. The new office complex also has a dedicated computing center. Here staff members can undertake feasibility studies jointly with partners and make test implementations. In this way and at a very early stage, interested parties and customers can obtain a good overview as to whether indeed their ideas can also be implemented – and if so, how.

Jens Peter (JP) Gotter is Head of Global SAP Center of Excellence and a Director at Dell in Frankfurt/Main.

Digital Evolution

Six Hana scenarios

In order to accompany firms on an all-encompassing basis as they enter the digitally-connected world, Dell has constantly extended its portfolio. The Hana-related services range from the definition of use and business cases, via platform migration, right through to implementation and operation – on-premise or in the cloud.

By Sebastian Gueler, Dell

Lots of companies are looking for opportunities by means of which they can use Big Data or can assess the vast mountains of data available internally, e.g. measurement data obtained from production machines – as efficiently, quickly and simply as possible. Hana offers an approach to this. Yet in this regard a widespread misconception still holds sway: this view reduces Hana to the functionality of a database management system (DBMS). Consequently the possible range of uses is unnecessarily limited and application users tap into only a fraction of Hana's potential. Dell has identified six value-categories that explain the application scenarios in which companies can use Hana and where the added-value is to be found.

1. Real-time operational intelligence

Use of real-time operational intelligence, subject-specialist departments are given information, almost in real-time, regarding the business processes currently taking place, and can then act accordingly. For instance, in the monitoring and managing of industrial facilities' operations, a whole variety of systems produce data on an ongoing basis, data that are of interest for the regular sequence of activities and for maintenance. Because machines are often monitored by different systems, hitherto the data gathered were analysed only after a time-lag. Hana makes it possible to assess immediately the measurement data currently coming in, using complex algorithms, and thus to recognize critical patterns.

If unexpected results emerge in operations, the staff can intervene straightaway – instead of waiting for the next monitoring interval – localize error-sources and deal with problems. In this way, the facility's non-scheduled down-times can be reduced and/or productivity can be raised. It is also conceivable to set up a dashboard for the Production Director, so that all central processes can be seen at one glance. More efficient processes of repair and maintenance save companies a lot of money.

2. Decision support, simulation, automation

Hana provides the possibility to read unstructured data – i.e. data that, as such, are unavailable as tables. As a result, Hana is suitable for assessing social-media data obtained from Facebook or Twitter, for example. Data sourced in this way include, for example, the opinions held about the relevant company and its products, or the effectiveness of a marketing or advertising campaign currently in progress is measured. Another example is the assessment of machine-data and the forecast of when production by a given machine will be disrupted. The data assessment and the notification can proceed automatically. Such an application-scenario is based on models that automate processes, based on a body of rules, and thus operate them more efficiently. Hana analyses the data that emerge from this, forecasts future events and automatically produces instructions for action to be taken to avoid harm.

Sebastian Gueler is SAP Practice Director at Dell.

3. Business Process Performance

Many business processes, e.g. the constantly-recurring monthly accounts, which not infrequently required a week or even longer, can be cut down to just a few days by Hana, This is primarily evident in the context of the jointly-incurred costs and their redistribution among the various cost-centers.

Yet some companies do not limit themselves to merely accelerating the applications and the complex business processes involved in material requirements planning (MRP). They are also using the shorter calculation times to produce target-versus-actual comparisons more quickly, and thus for a core element in the calculation of planned costs. The insights thus gained can then flow directly into the adaptation of

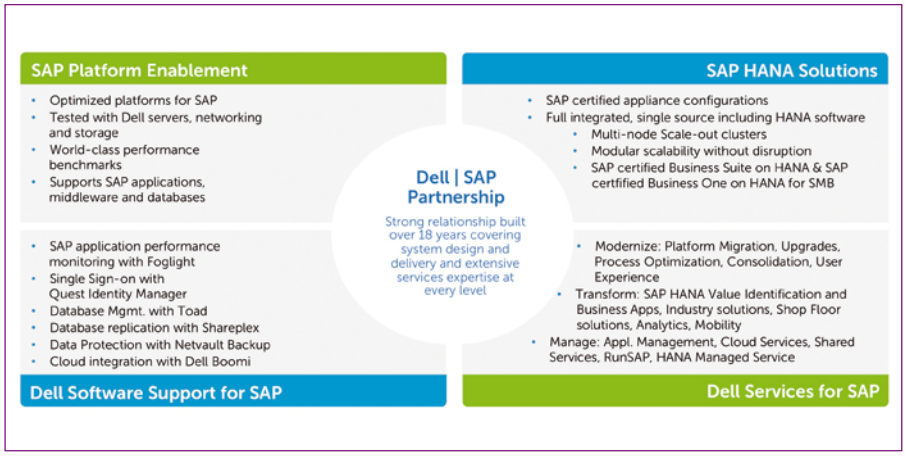
operational-level business processes. The more precisely you know "which screws need adjusting", the greater the efficiency gained as a result.

4. Big Data

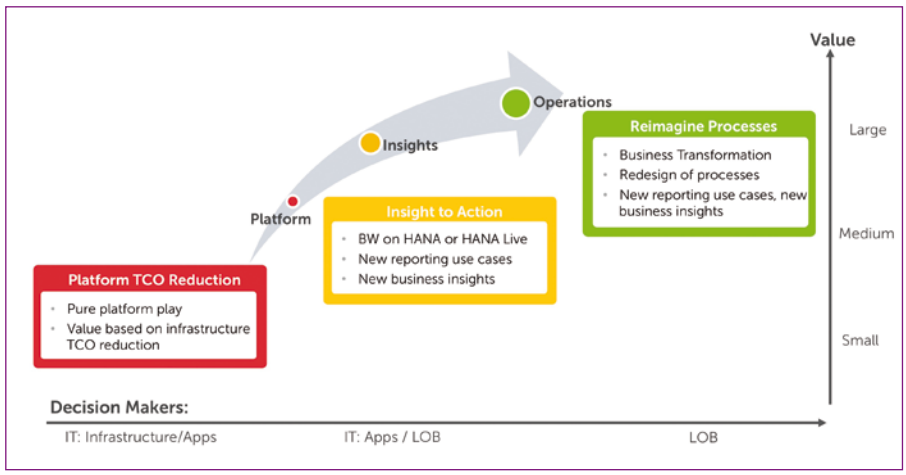
Big Data is a classic case of a Hana application requiring large data-quantities to be rapidly read, processed and arranged so as to produce instructions for action. Yet the truly new aspect is not the fact that the results are produced faster, but rather that answers are produced to questions that hitherto were not even asked in the form that they are asked now; i.e. it is only through the analysis of results that new working hypotheses emerge in the first place. Beyond this, manufacturing firms use big-data applications, for instance, to be able to monitor and maintain an overview on the sources and quality of all pre-products. If a call-back is required for certain products, the cause of quality-related problems can be tracked down and eliminated very quickly. Likewise, in the food and pharmaceutical sectors respectively, it is becoming ever more important to maintain proof of the pre-products' provenance, so as to be able to fulfil demanding compliance stipulations.

5. Data warehouse and data marts

As regards data warehousing and data marts, the issue is initially one of shaping the SAP infrastructure, one that in many instances consists of several data layers. For instance, the data from round-the-clock manufacturing, constantly being updated, is to be found in the ERP system (SAP ECC). In many instances there is still a data warehouse available, containing data from the ERP system and from various other sources, in addition to a data mart containing copies of parts of the data warehouse that have been brought together. Consequently, several copies of the data exist that are not synchronized with one another. The manufacturing data are passed on into the data warehouse overnight at some point in time and – to put it bluntly – by the next morning they have ceased to be up-to-date. With Hana, these problems are a thing of the past. The in-memory database loads all data required from the various sources in a short space of time; they are then available for data-warehousing applications. This produces a higher degree of data reliability and an optimization of the whole information flow, reaching from the data source to the individual application-users at all the company's levels.

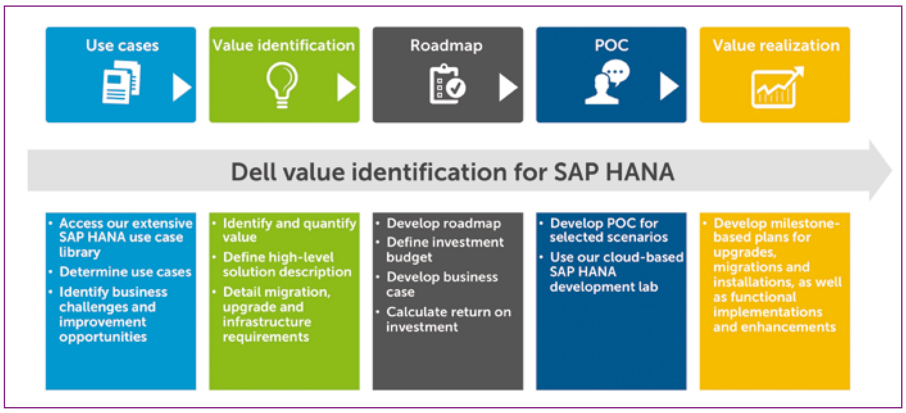


The Dell portfolio of solutions for SAP encompasses infrastructure, software and services.



An evolutionary roadmap for the introduction of Hana.

The six value-categories of Hana.



Defining milestones and establishing their content serve as substantial contributions to project success.

6. Business-process simplifications

A typical business process in a company can require several SAP transactions, with an equally high number of SAP screens. Hana enables this information to be completely consolidated into one single view. This means that all data sources are drawn together for them to be presented at a single place. For this, Hana uses Fiori, the HTML5-based user-interface technology from SAP. This web-based approach makes it possible to use a link to connect information sourced from various transaction-oriented and analytical applications, and also to refine and to simplify business processes, thereby ultimately raising the employees' productivity.

Roadmap for introduction of Hana

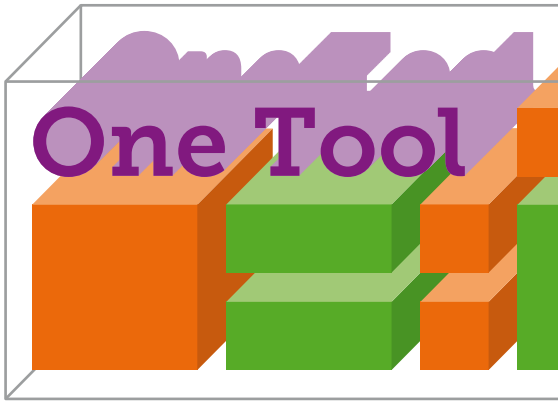
Many companies start with a less complex application scenario, e.g. from reporting. The transformation then advances slowly in three stages: in the first, the evolutionary transformation begins, mostly with a platform migration. This is a typical IT topic if a company replaces its existing servers by means of a Hana appliance. In this context, it is initially just a matter of renewing the infrastructure. Thus, at the first stage, there is often talk of a TCO Play: this means that the reduction of data quantity – Hana allows it to be reduced by about a third – the IT infrastructure can be built on a leaner basis, and the overall operating costs go down. The immediate prompt for projects of this kind is frequently the end of a hardware life-cycle after six or seven years, and its replacement by a new solution. The second stage can be described as moving from "Insight to Action". Here companies wish to use Hana to extend their reporting operations, for instance, thereby building up additional application-scenarios (use cases) for reporting. Here the issue is new insights into the business processes, so as to be able, as a company, to react more quickly on this basis and also to improve the processes. Dell characterizes the third stage as "Reimagine Business Processes", in which the SAP Business Suite for Hana or S/4 Hana are put into use so as to structure business processes more efficiently. This third stage is not yet used on a widespread basis. Ultimately, through an evolutionary transformation, companies are put into a position to reduce the costs for business processes and to tap into new sources of turnover.

Application scenarios

When it is a matter of developing specific application-scenarios, it is important to make the business processes the point of approach. A pure consideration of performance at the technical level, one in which the challenge is to achieve more input-output operations per second, to use storage space more efficiently, or to implement batch jobs more quickly, serves as only a single building block in a much more extensive overall concept.

Thus, in the context of a management-consulting approach, Dell addresses the business processes, clarifies individual value-categories, and explains how companies can benefit from such categories by using Hana. The advantages attainable as a result quickly put in the shade typical TCO savings gained through a consolidation of the IT infrastructure. Based on specific business cases, it becomes evident how quickly an investment can prove itself to be worthwhile. Dell has built up a database with many more than 100 application-scenarios, e.g. for maintance, production, reporting or marketing. There are also templates, some of them made ready in advance, by which an implementation can be effected promptly, according to the 80-20 rule. Such Rapid Deployment Solutions (RDS), certified by SAP, can be put into effect quickly. 80 per cent of the solution is ready from the outset, whereas a mere 20 per cent of it has to be adapted accordingly to a customer's individual requirements. The finished all-encompassing Hana solution from Dell, including Hana Appliance or servers, software and service, can initially be tested by a company with its own data, in a proof-of-concept process that uses a cloud hired for this purpose. Beyond this, Dell supports the IT department or the subject-specialist department respectvely in formulating a business case – including special aspects such as calculation of TCO and ROI, the cash-flow, operation in the customer's computing center, or a use of cloud services and also a road-map, stating precise time sequences for all milestones.

Oracle, ASE and now also Hana



A simplified administration of Oracle databases for SAP solutions has been characteristic of Dell Toad for a long time now. Additionally, the toolset supports SAP ASE, SAP IQ, SAP SQL Anywhere and, since last summer, Hana.

By Ales Zeman and Michael Sass, Dell

With Toad, Boomi and SharePlex, Dell is offering high-performance solutions, enabling companies to reduce the complexity of database administration, and also reduce the workload of integration and migration into Hana environments, as well as boosting productivity. Developers and administrators of databases, who have hitherto used Toad solely together with Oracle, can now use Toad for SAP Solutions to administer all their SAP databases, with a single tool. This reduces that resource commitment involved in learning that otherwise emerges when another database-management system is additionally included. Accordingly, those switching from another system can more quickly start productively with Hana. Toad means that developers and administrators, deploying several database-management systems in one SAP environment, obtain a tool with which they can work on a uniform basis on various platforms. Through the involvement of the SAP Hana Cockpit, administrators, developers and power-users can use Toad to carry out the most diverse range of tasks without needing to switch the tool used.

Toad includes extensive functions for performance-optimization and automation of frequently-recurring routine tasks.

Administrators have numerous options at their disposal for using Data Definition Language (DDL) to produce SAP-Hana results. Developers get a high-performance editor with functions for code completion and formating, as well as fast access to frequently-asked questions. Power Users benefit from the import and export assistant for various formats.

Cloud-based integration platform

The Integration Platform as a Service environment (iPaaS) Dell Boomi links up almost any SAP- based and non-SAP-based cloud applications and on-premise applications. This enables companies to synchronize data between business-critical applications either in their own computing center or in the cloud, e.g. in the form of a sales-force integration or a Hana Enterprise Cloud. A further application-scenario is the linking-up of a classic SAP ERP application with the cloud-based solution Concur Travel and Expense. SAP took over the US company Concur in the autumn of 2014.

Middleware solutions for data integration, available and fixed on the respective company's own computing center - solutions used for data integration and also for master-data management - can scarcely keep pace with the ever-more complex digital business processes, IT infrastructures and the growing number of different data-sources. By contrast, cloud-based services offer the required functions for a flexible and effectively-scaleable exchange of data. In this context, on the one hand, companies must integrate into their business processes the data from local applications, such as ERP solutions, SAP modules or Oracle databases. On the other hand, there is also a need to take into account data from cloud services or from mobile applications. The various data sources are linked-up with the help of connectors. They make an implementation possible in a short period and also enable the needed information to be integrated simply.

Rapid Hana migration

The switchover from an older Oracle database version to a current one, or the switchover from Oracle to SAP ASE, but also a thoroughgoing modernization: all these themes recur regularly in SAP environments. It should be added that Hana is also available as a database for the SAP Business Suite, thus making it relevant for practically all current customers. This is why ever more companies have to engage with the topic of a migration to Hana. Another reason: the in-memory technology offers extensive potential for improving the business processes and, not least, the possibility to transform them by moving them towards "real-time" operation.

Dell SharePlex offers a solution for database migration. Here a streaming procedure comes into play outside the database. The method bases itself upon a protocol-based replication technology. This ensures that data integrity is maintained without influencing the application itself. As a result, the hitherto-customary down-time periods can be reduced by up to 90 per cent in comparison to traditional migration methods. A positive side-effect is evident for companies switching from an Oracle database to Hana and who have hitherto used Toad for administration work. Concerning the administration, they can build upon the experience gained and on their expertise, putting the latter to use for Hana after the migration is completed.

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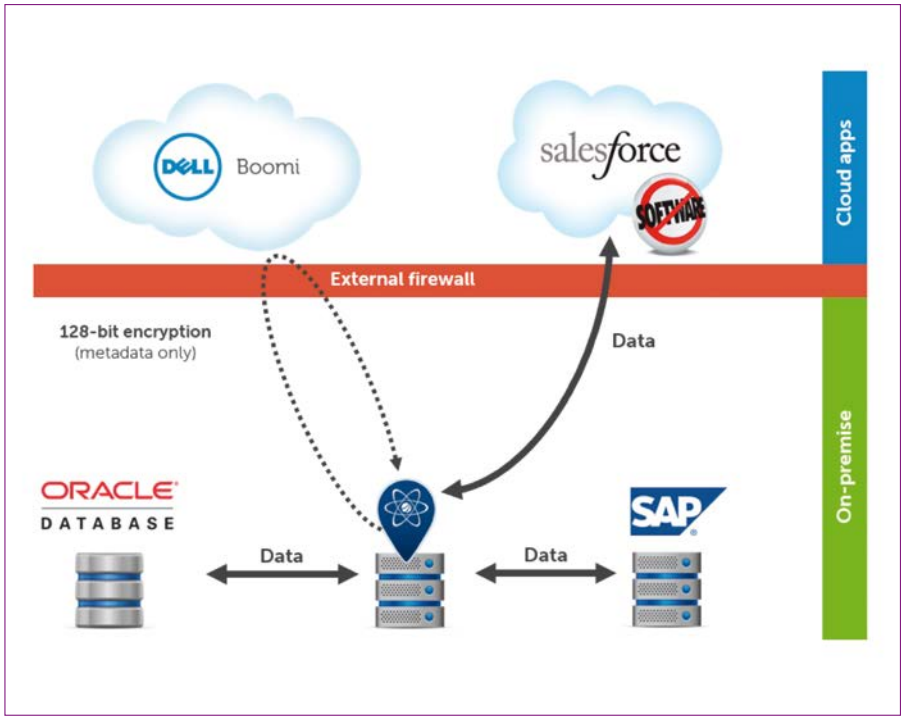

Because of the strong level of encryption, the Boomi integration offers a high level of security and provides data-protection.

Future-ready cloud-portfolio

From a trend to an everyday reality

Having overcome some difficulties, cloud computing has by now established itself, in Germany as elsewhere. Increasingly, the hybrid cloud is proving to be a model for the future. Dell can offer a broad portfolio of infrastructure, software and services to meet the needs.

By Roland Kunz and Jürgen Domnik, Dell

For a long time, cloud computing found the going tough in Germany. For the first years after the cloud was inofficially started in 2006, the new – and thoroughly revolutionary – IT concept was widely discussed and tested, but few indeed dared to take the plunge with specific implementation projects. Above all, it was German SMEs, the backbone of the national economy, remained decidedly wary on the topic of cloud computing for a long time, even after the new decade saw major firms in this country implementing cloud-based solutions to an increasing degree. Many were unnerved by the concept of placing into another's hand their own data – the digital transsubstantiation of their know-how, so to speak – knowing that it the data are not on their own premises and under their own control, that is to say dispensing with the possibility, in an emergency, of pulling out a plug without consulting with the CIO and thereby simply detaching oneself from the world's various perils. Over time, however, the financially quantifiable advantages of cloud use, based around scaleability and flexibility, cannot fail to impress anyone who studies the numbers; so, starting from about 2011 onwards, companies nevertheless began to warm to the idea of the cloud on a broad basis – that is to say also among cautious SMEs. The major cloud crisis, based around the Snowden affair, halted this development in 2013. Now all at once all objections and misgivings were vindicated and in fact everything was even worse than was ever feared. Those who, on principle, had not let anything digital out of their hands had backed the right horse – or so it now seemed. So it is little surprise that there was sceptical talk of the "end of the cloud". Today, more than two years later, the waves have calmed down once again; a more differentiated evaluation has gained the upper hand and nevertheless nothing is as it was before 2013. Hardly anyone considers the objections and misgivings as having been fundamentally proved to have been dealt with. On the contrary: today they are an established integral part of any sound strategy for the cloud. Nobody seriously refutes the risks that cloud computing entails. The safety of data, applications and systems is a top issue wherever the cloud is discussed. Accordingly, the distinction currently made for the cloud concept, dividing it into "public" (in fact, in 2006 this alone was what the idea amounted to), "private" and "hybrid", is also a consequence of this rather laborious path taken. To that extent the intervening nine years of cloud computing can be understood as a process of maturing and learning, one that has overcome cliffs and setbacks to get to an interim result, one that is clearly better, more efficient and – above all – safer than what was brought into play back in 2006. This has made cloud computing into a success story, one with a solid and secure foundation for continued success, notably in this of all countries.

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Jürgen Domnik is Director, Strategic Programs at Dell Enterprise Solutions Group.

Hybrid takes priority

It's no wonder that today cloud computing is also established in Germany, not solely among fans but also within the realm of responsibility of cautious engineers and finance specialists. Almost half of German companies are already using cloud computing, and a further quarter has corresponding plans in the pipeline. However, the long and often laborious path to the cloud has

meant that today it is notably companies in Europe - especially in Germany - that today perceive these advantages in a very differentiated way. Dogmatic positions – be they "only the cloud" versus "never the cloud" – are only rarely to be found here. Unlike in the USA, where the public cloud takes center-stage, here clear preference goes to the hybrid cloud, i.e. the combination von public cloud and private cloud: nine out of ten firms prefer the hybrid model for future IT environments, because while they do wish to use the advantages of the cloud concept, they do not wish everything to be in the hands of anyone external. In the context of test environments and development environments, there is eagerness to make avail of the public cloud's advantages in relation to costs and flexibility – particularly also in the realm of SAP applications. Yet as soon as operations move into the pre-production or production phase, the companies expect more security and control.

The hybrid approach also demonstrates its merits from the viewpoint of subject-specialist, content-related aspects: particularly in Germany, ERP systems are frequently operated on a conservative basis, i.e. on-premise is the preference; only few have dared to place a whole SAP environment into the public cloud or respectively into Amazon S3. One reason is that the data in question are considered too important; another is that the automation of the relevant company's SAP world is not yet at a sufficiently advanced stage; here many application-users are still at the commencement stage. In other areas, companies are further down the path. For instance, for e-mail applications or with MS Office 365 there is markedly greater acceptance of the cloud. As a basic trend, commodity applications tend to be placed into the (public) cloud; this is because here cost advantages can usually be gained without there being a "catch". As regards SAP systems, the preference is an off-premise private cloud, as is offered through managed-service providers; in this context, Dell in Germany uses the services of tested and proven partners.

A further important aspect is the high level of standardization, serving as the foundation for the public cloud's cost advantages – indeed these only come into effect because providers are able to make available the same resources in the same way to many customers. Yet that limits the possibilities for differentiation that application users have in the market. For this reason, among others, application users often keep central tasks and assets as close to the company as is possible; this may be done in a classic on-premise model (with the IT

Cloud Management
Dell Cloud Manager

Cloud Monitoring
Dell Foglight

Cloud Backup & Recovery
Dell AppAssure,
EMS E-Mail Continuity, Archive

Cloud Integration
Dell Boomi

Cloud B Data Analytics
Statistica, Kitenga, Toad

Cloud Security
Dell Cloud Access Manager
Encryption DDP-E

GRA Cloud Portfolio: an overview of Dell's Cloud Portfolio.

on the company's own site), one which can nevertheless use cloud technology; alternatively, off-premise and based with a service provider, with this being in a dedicated environment that makes its resources available on an exclusive basis. Ultimately the challenge is to find a a "golden middle path" between flexibility, efficiency and security; this path converges directly into the hybrid cloud. By now there is also a strong trend towards "public cloud repatriation": many companies that have tried out the public cloud see that their requirements with regard to security and individualization cannot be fulfilled by that approach. Unlike at the start of the cloud era, today there are also smaller service-providers on the market, making better-adaptable private clouds available than the large private clouds can, thus presenting the application-users with alternatives. Yet most companies retain the experience gained, continuing to use the public cloud as an additional resource, e.g. for peaks in demand – meaning ultimately that they likewise find themselves back in a hybrid-cloud environment.

It is notably due to the diversity of models and approaches, able to accommodate various requirements, that cloud computing is proving to be a market that is recording significantly greater growth than the rest of IT is. From the outset, Dell has been accompanying the application-users' journey to the cloud and subsequently their journey with the cloud. Today the company is offering a broad portfolio of solutions that cover different cloud models, cloud architectures and cloud approaches, for all sizes of workload. In this context, what Dell provides is hardware, software and the suitable services respectively – in other words, complete solutions.

- Dell supports the establishment of local private clouds through hyperconverged servers, software-defined datacenters and software. The inftrastructure-related and automation-related solutions allow application-users to operate their cloud environments efficiently with their own assets. For instance, IT-specialist or SAP-specialist application users can book test systems or development systems themselves, or they can quickly either provide new resources or respectively make avail of them.
- Application-users, needing a private cloud but not wishing to operate it themselves, can use service-providers. Here Dell cooperates with partners who provide an infrastructure and also host it; for this they also offer special SAP know-how and managed services. In this context, Dell also builds up such cloud environments together with the providers, supporting them in the provision of their services.
- With the Dell Cloud Manager, application-users can manage and supervise services in various clouds, be they their own clouds or external ones.
- Solutions such as Shareplex and Boomi provide support to application-users in the integration and migration of applications into the cloud, e.g. Salesforce or a travel-costs calculation.
- Because security is a topic of central significance in each cloud environment, Dell offers an extensive cloud-security portfolio. This includes managed security on the one hand, i.e. security services such as a proactive monitoring that draws companies' attention to possible dangers. On the other, Dell offers software products with which application-users can improve their cloud security themselves, for instance the Dell One Identity Manager for comprehensive access management and identity management.

In future the majority of companies will take the hybrid-cloud approach because only in this way can they fulfil a differentiated profile of requirements. In doing so, they select a model that is more discerning than an "Everything Cloud" – perhaps rather simplistic but not particularly viable – or a "Never Cloud" model. On the path to this cloud, it is all the more important to have a partner who – like Dell – not only commands a high-performance cloud portfolio but has also acquired expertise and experience in cloud computing.