

Dell EMC Ready Bundle for HPC Life Sciences

Accelerate time to insight with high throughput and fast turnaround

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Faster time to production

Better performance

Easier scalability

Get life-changing answers, faster

For healthcare and life sciences projects, every hour closer to discovery and results can mean the difference between life and death. But life sciences organizations face many factors that may cause inefficiencies and hinder discovery. For example, it's challenging to design a system that provides the immense computational power and storage capacity required by life sciences workloads. And many organizations face the daunting task of designing and deploying HPC infrastructure while performing complex integration and performance tuning with little IT expertise or support.

The Dell EMC Ready Bundle for HPC Life Sciences can accelerate time to insight for a range of applications, including genomic sequencing, drug design, cancer research, precision medicine, cryo-electron microscopy (cryo-EM) and many more.

Faster time to production

When speed to results matters, Dell EMC experts can help you build an HPC solution that addresses complex life sciences challenges and enables efficient planning, design and implementation. Dell EMC Ready Bundles for HPC are built on modular building blocks that can be configured and ordered in a simplified process that takes just hours instead of weeks.

Better performance

Dell EMC is committed to helping more people make more innovations and discoveries than any other HPC solutions vendor in the world. To that end, Dell EMC engineers and industry experts have worked in collaboration with Dell EMC customers and partners to design and tune these solutions for life sciences workloads. The Dell EMC HPC Innovation Lab works closely with customers and partners to optimize, integrate and test these solutions. The Dell EMC engineering team then devotes hours to rigorously tuning these solutions for your specific applications and workloads, with a focus on efficiency, performance and reliability.

Easier scalability

Dell EMC Ready Solutions for HPC can help you get the most out of your IT infrastructure today — and tomorrow. That means creating solutions that enable you to scale easily to meet new capacity and performance demands over time. Dell EMC's extensive track record with all aspects of the computing environment — compute, storage, networking and services — enables us to implement holistic solutions that work for you from day one, with an eye toward the future.

Do any of these challenges sound familiar?

“Designing, deploying and tuning infrastructure with little IT expertise or support is complex and time-consuming.”

HPC for life sciences has traditionally been a custom-built, non-standardized technology. In addition, all aspects of an HPC solution are interconnected and impact the overall success of the system: performance, reliability, access protocols, scalability, ease-of-management, price, power and more. Building a solution from scratch that addresses each one of these requirements is naturally complex and time-consuming. The Dell EMC Ready Bundle for HPC Life Sciences is a solution that can reduce deployment time and speed time to production.

Dell EMC is a leader in creating HPC solutions — regardless of size or complexity — that deliver fast setup with a wide range of optional services for maximizing HPC investments. With proven success in thousands of implementations worldwide, you can be confident with Dell EMC as your partner.

“Providing the performance required for life sciences workloads is challenging.”

Software-licensing costs and application-specific performance are greatly affected by system design, and finding the right mix for both can be difficult. You may also need code optimization to take advantage of the latest technologies. The Dell EMC Ready Bundle for HPC Life Sciences features industry-specific designs that are tuned by Dell EMC engineers and industry experts for specific life sciences workloads.

“We need scalability to handle rapidly growing data sets.”

The growth of life sciences data is pushing data repositories to incredible sizes. Life sciences researchers can generate and consume data at such speed that multiple petabytes to exabytes are starting to become commonplace. And the data requirements around performance and capacity keep increasing rapidly. The design of the Dell EMC Ready Bundle for HPC Life Sciences can make it easy to manage and extend storage and networking on-premises so you can grow over time.

Customer success stories

Beijing Genomics Institute

288.5TFLOPS peak performance **20%** TCO reduction compared to previous solution **70GB** I/O speed

Read the case study: [Using a modular architecture to understand the mysteries of life.](#)

Tsinghua University’s Protein Technology Center

4X increase in compute power **50%** reduction in IT complexity **75–80%** reduction in compute time

Read the case study: [Science computing supports near-atomic structural studies.](#)

Dana-Farber Cancer Institute, Harvard Medical School and Peking University

~2PB of storage **1,000X** faster averaging compared to previous solution

Read the case study: [Leveraging HPC Hardware to Run Next-generation Molecular Imaging Analysis.](#)

Dell EMC Ready Bundle for HPC Life Sciences

The base configuration shown in the following table serves as a starting point for your solution. Dell EMC engineers will assist you with designing an HPC solution for your specific needs.



Technical specifications

Servers / processors	Head / master nodes	Choice of: PowerEdge R440 PowerEdge R640 PowerEdge R740 PowerEdge R740xd	PowerEdge R6415 PowerEdge R7425, R7415 PowerEdge M640
	Compute nodes	Choice of: PowerEdge R440 PowerEdge R640 PowerEdge R740 PowerEdge R740xd PowerEdge R940 PowerEdge R6415 PowerEdge R7425, R7415 PowerEdge M640	PowerEdge M830 PowerEdge C4140 PowerEdge C6420 PowerEdge C6320p PowerEdge FC430 PowerEdge FC640 PowerEdge FC830
	Processors	Intel® Xeon® Scalable Processors	
	Accelerator nodes	Choice of: PowerEdge C4140 (up to 4 double-width GPUs) PowerEdge R740 (up to 3 double-width GPUs)	Choice of Accelerators: NVIDIA® Tesla® V100 (SMX2 and PCIe), P100 (SMX2 and PCIe), P40, P4, K80
Operating systems	Head nodes	Red Hat® Enterprise Linux® (RHEL) 7.4 (2 or 4 socket)	
	Compute nodes	RHEL 7.4 for HPC Compute Node (2 or 4 socket)	
Cluster management		Bright Cluster Manager®	
Networking		Dell EMC Networking H-Series Edge Switches based on the Intel Omni-Path Architecture InfiniBand® interconnect and FDR and EDR switches Ethernet adapters and switches	
External storage	NFS	Dell EMC Ready Bundle for HPC NFS Storage	
	Lustre®	Dell EMC Ready Bundle for HPC Lustre Storage	
	Isilon	Dell EMC Isilon Scale-out NAS Storage	
Systems management		Dell EMC Deployment Toolkit (DTK) Dell EMC OpenManage (OM)	

Winner of the coveted HPCwire Editors' Choice Award for Best use of High Performance Data Analytics.¹⁰

Why Dell EMC?

The combination of Dell and EMC brings together two industry-leading companies with strong reputations for value and innovation. Dell EMC holds leadership positions in some of the biggest and largest growth categories in the IT infrastructure business, and that means you can confidently source your IT needs from one provider — Dell EMC.

- #1 in both number and size of XSEDE HPC systems for U.S. open science¹
- #1 fastest supercomputer on the African continent²
- #1 converged infrastructure³
- #1 in traditional and all-flash storage⁴
- #1 virtualized data center infrastructure⁵
- #1 cloud IT infrastructure⁶
- #1 server virtualization and cloud systems management software (VMware®)⁷
- #1 in data protection⁸
- #1 in software-defined storage⁹

World-class Dell EMC HPC Innovation Centers

Leverage these invaluable assets

You can work directly with Dell EMC HPC experts to test and tune solutions prior to purchase at worldwide Dell EMC HPC Innovation Centers:

- [Dell HPC Innovation Lab](#)
- [Cambridge Solution Centre](#)
- [University of Pisa](#)
- [San Diego Supercomputer Center](#)
- [Texas Advanced Computing Center \(TACC\)](#)
- [Centre for High Performance Computing in S.Africa](#)

¹ Dell EMC has the most systems in XSEDE, including the largest system. Systems include SDSC Comet, SDSC, TACC Jetstream, TACC Stampede, LSU SuperMIC and TACC Wrangler. TACC Stampede is the largest system in XSEDE. See "[XSEDE Resources](#)."

² The Next Platform, "[South African Lengau System Leaps Towards Petaflops](#)," June 2016.

³ IDC WW Quarterly Converged Systems Tracker, Q1 2017, June 2017, Vendor Revenue.

⁴ IDC WW Quarterly Enterprise Storage Systems Tracker, September 2017, Vendor Revenue — EMC Q2 2017.

⁵ Dell EMC Annual Report, 2015.

⁶ IDC WW Quarterly Cloud IT Infrastructure Tracker, April 2017, Vendor Revenue — EMC Q4 2016.

⁷ IDC WW Virtual Machine and Cloud System Market Shares 2016, July 2017.

⁸ Dell EMC Pulse, "[Gartner Recognizes EMC as a Leader in the 2016 Data Center Backup and Recovery Software Magic Quadrant](#)," June 2016.

⁹ IDC WW Semiannual Software Tracker, 2H2016, April 2017.

¹⁰ HPCwire, "[HPCwire Reveals Winners of the 2016 Readers' and Editors' Choice Awards at SC16 Conference in Salt Lake City](#)," November 2016.

Services and financing

Dell EMC Professional Services

Solutions customized for your needs

Leverage on-site integration or application implementation with [Dell EMC Professional Services](#).

Support is always on for you

Enjoy unlimited access to 24x7 chat, email and phone support services with how-to assistance and disaster recovery from [Dell EMC ProSupport](#). For example, [Remote HPC Cluster Management](#) keeps HPC systems running smoothly, with proactive monitoring and management.

Deployment assistance when you need it

You can trust Dell EMC to deploy the racked configuration in your data center, including network cabling, operating system, firmware and hypervisor with [Dell EMC ProDeploy](#). For example, Dell EMC has a list of service offerings that make cluster installation deployment easier, including [Rack Integration](#), [Data Center Deployment](#) and [HPC Cloud Bursting](#).

Dell EMC Financial Services

- Full-service leasing and financing solutions are located throughout the U.S., Canada and Europe.
- Dell EMC Financial Services can finance the total technology solution.
- Electronic quoting and online contracts offer an efficient purchase experience.

Learn more about [Dell EMC Financial Services](#).

Take the next step, today

Don't wait to find out how Dell EMC can simplify and speed life sciences applications and workloads. Contact your Dell EMC or authorized channel partner representative for more details right away.

Contact us

To learn more, visit dell EMC.com/HPC or [contact](#) your local representative or authorized reseller.

