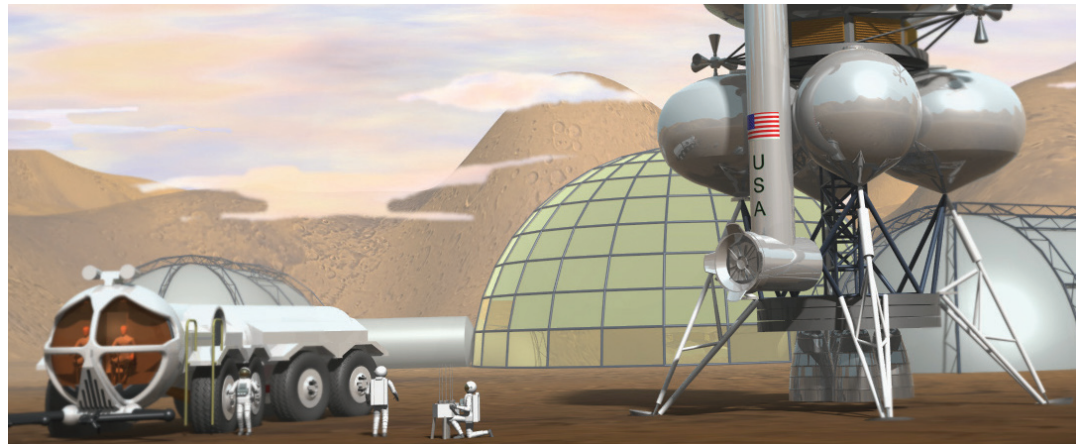


HP  
and  
Bentley



Give Yourself a Design Edge





*“Our relationship with HP has many facets that benefit our mutual customers. Not only do we test HP workstations for compatibility with our software, but we also work closely with them to ensure the best 3D graphics experience.”*

Tom Kurke,  
Vice President,  
Bentley Systems, Incorporated

The HP commitment to innovation and solutions excellence, and HP’s relationship with Bentley Systems, Incorporated® provide you with an engineering edge. HP workstations are built with the latest technology, including processors from Intel® or AMD; professional graphics cards from NVIDIA or AMD ATI; Microsoft® Windows® operating systems; high-speed storage; fast, reliable memory that is designed, tested and built for both high performance and extreme stability when running professional applications; and HP Performance Tuning Framework. In addition, all workstations can run HP Remote Graphics Software. You get world-class design and unique HP features that help maximize your design productivity.

### **HP Innovation**

HP innovation is most evident in our first-to-market features. Innovation keeps you ahead of your competition by helping to improve productivity and shorten design cycles. HP workstations were first to include 64-bit<sup>1</sup> architecture, Quad-Core<sup>2</sup> processing, 80 PLUS efficient power supplies, tool-less chassis, state-of-the-art acoustics and liquid cooling.

### **HP Engineering Helps You**

HP engineers focus their technical expertise on the complete solution—Bentley software running on HP hardware. Bentley software is thoroughly tested on our workstations, so you can be assured that your solution works flawlessly. We leverage this application knowledge in HP Performance Tuning Framework, which enables you to adjust settings to assure your applications reach peak performance. If the need arises, our application experts are available for support calls and resolving customer issues. Together with Bentley, we help customers achieve their goals.

### **Bentley Systems, Incorporated**

Bentley provides software for the lifecycle of the world’s infrastructure. The company’s comprehensive portfolio for the building, plant, civil, and geospatial verticals spans architecture, engineering, construction (AEC) and operations. With revenues surpassing \$400 million annually, and nearly



2,500 colleagues globally, Bentley is a leading provider of AEC software to top design firms and major owner-operators, and a leader in GIS/geospatial software solutions.

### **Innovations by MicroStation®**

MicroStation is Bentley’s innovative CAD platform used by teams of architects, engineers, contractors, and GIS professionals to coordinate 2D and 3D work on buildings, civil engineering and power generation projects, airports, water networks, rail and transit systems, GIS and more.

Key innovations by MicroStation are used to integrate Bentley’s comprehensive software portfolio of vertical applications, and to deliver interoperability, power, accessibility and photo-realistic visualization to every user.

For these reasons and more, MicroStation has become a standard among the design elite of the ENR Global 150.

### **Get Connected by ProjectWise®**

ProjectWise® collaboration software connects people and information across project teams—no matter where they are located—to help them improve quality, reduce rework and meet project deadlines.

When connected by ProjectWise, project teams can efficiently manage, find, share, publish and review CAD and geospatial content, project data and Microsoft® Office documents.

The ProjectWise collaboration system includes desktop and server software for content management, content publishing, and design review. It uniquely addresses the project needs of all connected stakeholders to deliver average annual employee savings of 13 percent and firm-wide ROI of between 10 and 40 times the initial ProjectWise investment.

With results like these, it’s no surprise that 42 of the 50 leading organizations in the ENR Top 500 are now Connected by ProjectWise.



### HP provides more to Bentley customers

- HP thoroughly tests and certifies each HP Personal Workstation for more CAD applications than anyone else.
- Bentley uses HP workstations internally to develop and test its software.
- HP workstation graphics are thoroughly tested to support Bentley software.
- HP Performance Tuning Framework has special features to optimize the performance of Bentley software.
- HP's experts are available to support customers and recommend configurations.

### Bentley Civil Engineering Solutions

Bentley facilitates collaborative, model-based design with civil engineering solutions that support each phase of the asset lifecycle—planning, design, engineering, construction, maintenance and operation. Bentley provides comprehensive modeling solutions for building and maintaining infrastructure, including:

- Roads and highways
- Rail and transit
- Airports
- Bridges
- Water resources
- Land development

### Geospatial Engineering Solutions

Bentley's geospatial solutions are based on the seamless integration of GIS technology within engineering workflows. These solutions help organizations plan, design, build and operate infrastructure for communications service providers, electric and gas utilities, water utilities, local and national governments, and cadastres and mapping organizations.

### HP and Bentley Together

The unique relationship between HP and Bentley allows the companies to offer a comprehensive portfolio of solutions that addresses the needs of our joint customers with innovative hardware and software that is tuned and integrated. Our close relationship and engineering expertise assure solutions that perform not only today, but for the long run.

### HP Remote Graphics Software

HP Remote Graphics Software (RGS) is an advanced utility that allows you to remotely access and share your workstation, its 3D graphics power and all of its applications. Using patented HP compression technology, RGS minimizes network usage<sup>3</sup> and enables remote access without compromising performance or image quality. The technology enables real-time sharing of high-resolution imagery, allowing creative teams from multiple remote sites to function like they are all in the same room. Engineers and designers find immense value in the technology because communication is instantaneous and more people can participate. It speeds the design process.

## HP Performance Tuning Framework

This exclusive HP tool—pre-installed on all HP Personal Workstations—makes it a snap to configure and update HP workstations, improving their stability and performance. HP Performance Tuning Framework (PTF) has many features to help you work faster and more productively, while reducing hassles. HP PTF can:

- Provide a detailed configuration report so you can easily see what's on your system.
- Organize graphics driver certification information to help you make informed decisions when loading the latest drivers.
- Track memory use and graphically display how applications and processes use physical and virtual memory.
- Measure subsystem performance using Vista Performance monitoring.

HP PTF offers numerous other features, some of which are application specific. Support is easy. Just send your PTF configuration file when there is a problem—it's as simple as that. Best of all, HP PTF is free.

## HP Two-handed CAD

Two-handed CAD provides substantial personal productivity boosts for most users. HP's 3D motion controller complements a traditional mouse to deliver the advantages of two-handed CAD to Bentley. Users can easily change the center of rotation and quickly pan, zoom and animate assemblies. HP's 3D motion controller allows users to work faster with less movement, and significantly fewer mouse clicks.

## Go Bentley Website

HP maintains a dedicated Website for all users of Bentley software at [www.hp.com/go/bentley](http://www.hp.com/go/bentley). The Website helps with your workstation selection, providing the latest in recommended tested configurations for Bentley software, as well as certification and other useful information.

## HP workstation or PC?

**For Bentley users, the answer is easy!**

Engineering and design professionals require high-performance systems to support their complex 2D and 3D applications. HP workstations offer advanced features that deliver more power, stability, and dependability than standard PCs, including:

- Workstations are designed to process the data sets and execute the instructions of complex applications for the CAD and CAE market.
- Full testing and certification for most CAD and CAE applications.
- Enhanced processing power using AMD and Intel processors.
- More memory capacity and expandability than PCs.
- Professional-level graphics cards and advanced chipsets for high performance (not typically found on PCs).
- Disk drives that ensure high performance and reliability.

## Contact Information

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1217 Meyrin 2  
Geneva, Switzerland

#### EMEA workstation country homepages

[www.hp.com/eur/workstations](http://www.hp.com/eur/workstations)

For more information about HP and Bentley solutions,  
please visit [www.hp.com/go/bentley](http://www.hp.com/go/bentley).

Screen shot Images courtesy of Bentley.

1. 64-bit computing on Intel architecture requires a computer system with a processor, chipset, BIOS, operating system, device drivers and applications enabled for Intel 64 architecture. Processors will not operate (including 32-bit operation) without an Intel 64 architecture-enabled BIOS. Performance will vary depending on your hardware and software.
2. Dual-Core and Quad-Core are new technologies designed to improve performance of multithreaded software products and hardware-aware multitasking operating systems and may require appropriate operating system software for full benefit. Not all customers or software applications will necessarily benefit from use of this technology.
3. Performance subject to network speed.

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4AA1-7948ENW, July 2008



# Designing your engineering edge

The HP Workstation Configuration Guide for Bentley Applications



## HP recommends Windows Vista® Business

Engineers, design professionals and visualization experts all gain from the HP commitment to innovation and solutions excellence, as well as the unique relationship between HP and Bentley®. All HP workstations are built with leading-edge technology, and you can select a configuration that is ideal for your specific needs. Consider the choices: processors from Intel® or AMD; professional graphics cards from NVIDIA or AMD ATI; Microsoft® Windows® operating systems; high-speed storage; fast, reliable memory that is designed, tested and built for both high performance and extreme stability when running professional applications; HP Performance Tuning Framework and HP Remote Graphics Software. HP innovations and world-class designs distinguish HP workstations from the competition.

If you want HP first-to-market technologies like 64-bit<sup>1</sup> architecture, Quad-Core<sup>2</sup> processors, 80 PLUS efficient power supplies, state-of-the-art acoustics and liquid cooling, we've got them. Our ability to be first helps you stay a step ahead of your competition.

HP is one of Bentley's top hardware partners. We share technology road maps to assure our products work well together. Bentley software is developed and tested on HP hardware, so you can be confident when you choose HP workstations. Together, Bentley and HP offer a comprehensive portfolio of innovative hardware and software solutions—tuned and integrated to meet the needs of manufacturing and engineering markets. Our close relationship means that HP technology—along with our engineering expertise—provides you the solutions that perform not just today, but for the long run.

HP engineers bring technical expertise to the complete solution—Bentley software and HP hardware. Bentley software is more thoroughly tested on our workstations than on any other hardware system. We leverage our systems knowledge in HP Performance Tuning Framework, which enables you to make system adjustments so your applications work at peak performance.

## HP xw4550 Workstation

The HP xw4550 Workstation makes the power of a highly reliable, professional-class system affordable for most small and mid-sized businesses. Tested and optimized for both 2D and 3D applications, the HP xw4550 provides performance, expandability and entry- to mid-range 3D graphics. Its AMD Opteron™ Dual-Core<sup>2</sup> processor is second-generation technology. Designed with a tool-less chassis for easy service, the HP xw4550 Workstation can be configured with a variety of processor speeds and memory configurations to suit your specific requirements. With an 80 PLUS efficient power supply standard and ENERGY STAR® qualified configurations, the HP xw4550 is designed to optimize energy use. This workstation's combination of price and performance make it an outstanding value.

## HP xw4600 Workstation

The HP xw4600 Workstation combines next-generation performance technology with expandability, reliability and affordability. It is based on the new Intel® X38 Express performance chipset and the latest workstation-class Dual- and Quad-Core<sup>2</sup> Intel processors. The HP xw4600 supports up to 8GB of memory and comes with your choice of 2D or 3D professional graphics cards. It's powerful enough to meet the demanding requirements of data-intensive applications like those used in the Architecture, Engineering and Construction industry. Optional Remote Graphics Software allows you to access and share the desktop of a remote computer over a standard network, making your busy life a bit easier. HP Performance Tuning Framework lets you optimize your system for high performance. With an 80 PLUS efficiency power supply standard and ENERGY STAR® qualified configurations, the HP xw4600 is designed to optimize energy use.



HP recommends  
Windows Vista®  
Business

### HP xw6600 Workstation

The HP xw6600 Workstation is a high-performance machine engineered for environments where space is at a premium and noise must be minimized. Its Dual- or Quad-<sup>2</sup> Core Intel® Xeon® Processor with the new 45nm technology provides ample power for your team members to create, design and analyze more in less time. Its dual Gen2 PCI-e interfaces leverage an architecture that can deliver up to twice the graphic performance of previous systems. The HP xw6600 is designed for expandability in anticipation of your future needs. It achieves quiet operation by paying close attention to airflows, and by using quiet fan technology. Its system design is energy wise, using 80-watt processors and an 80 PLUS efficiency power supply.

### HP xw8600 Workstation

The HP xw8600 Workstation is designed for extreme performance and limitless possibilities. It provides power, versatility and reliability for massive compute and visual capacity—to give your business a decided edge over the competition. The HP xw8600 meets the most demanding engineering challenges with the latest Intel® Dual- and Quad-Core<sup>2</sup> processors with the new 45nm technology. It integrates the Intel 5400 chipset to deliver four times the graphics processing throughput of previous generation systems. The HP xw8600 features the greatest expandability and range of options available in the HP Workstation family. Its 80 PLUS efficiency power supply makes the most of every watt of power, and its tool-less chassis means it's easy to service.

### HP xw9400 Workstation

The HP xw9400 delivers uncompromised graphics performance and maximum expandability. It supports up to four 3D graphics displays, dual PCIe x16 graphics, and Dual-Core<sup>2</sup> AMD Opteron processors to meet the combined needs for computational power, visualization power, and I/O performance, while helping to lower your total cost of ownership. It's an excellent choice for high-performance graphics solutions such as parallel rendering or compositing.

### HP xw460c Blade Workstation

The HP xw460c Blade Workstation provides the perfect solution for those who are looking to leverage HP remote technologies to support remote sites, to protect Intellectual Property, to eliminate loading large files over the network, to centralize databases or to minimize total cost of ownership. The Blade workstation is a high-performance machine and uses either Intel® Dual-Core<sup>2</sup> or Quad-Core Xeon® Processors, supporting one or two processors, powerful 3D NVIDIA graphics, and up to 32 GB of ECC DDR-2 667 MHz memory. It is an excellent choice for those looking for serious innovation in their design process.

### HP Compaq 8510w Mobile Workstation

The HP Compaq 8510w Mobile Workstation provides exceptional computational and visualization performance in a powerful, yet portable 15.4-inch diagonal widescreen notebook weighing just 6.1 pounds.<sup>1,2</sup> You can run high-performance software from Bentley on this machine thanks to NVIDIA graphics and support for up to 4 GB of memory. It features Intel Core 2 Duo<sup>2</sup> processor technology with proactive security.

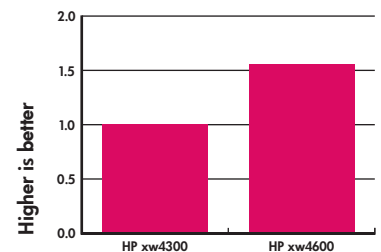
## HP xw4600 Workstation performs better

#### HP xw4600 Workstation

3.0 GHz<sup>5</sup> Intel® Core™ 2 Duo<sup>2</sup> Processor  
Genuine Microsoft® Windows® XP Professional  
NVIDIA Quadro FX 1700

#### HP xw4300 Workstation

Intel®™ Pentium® 4 Processor 3.8 GHz<sup>5</sup>  
Genuine Microsoft® Windows® XP Professional  
NVIDIA Quadro FX 4500



Source: HP Workstation Technical Consulting Lab

## HP Recommended Configurations for Bentley MicroStation®

(All HP workstations are thoroughly tested with MicroStation)

HP recommends  
Windows Vista®  
Business



Standard User

### HP xw4550 Workstation

Genuine Windows Vista® Business 32-bit with downgrade to Windows® XP Professional 32-bit custom installed<sup>6</sup>

Dual-core<sup>2</sup> AMD Opteron™ Processor Model 1220<sup>11</sup> 2.8 GHz<sup>5</sup>

HyperTransport™ 1000 MHz<sup>7</sup>

Chipset: AMD 690G with Radeon X1250

2 GB DDR2-677 MHz ECC memory<sup>3</sup>

NVIDIA Quadro FX 570

160 GB<sup>8</sup> SATA 3 Gb/s

DVD-ROM SATA<sup>9</sup>

HP LP2275w 22-inch Widescreen LCD Monitor

HP Remote Graphics Software

HP Performance Tuning Framework

HP Scroll Mouse

3-year warranty



Advanced User

### HP xw4600 Workstation

Genuine Windows Vista® Business 32-bit with downgrade to Windows® XP Professional 32-bit custom installed<sup>6</sup>

Intel Core 2 Duo<sup>2</sup> Processor 3.0 GHz<sup>5</sup> E6850<sup>4</sup> 1333 MHz Front Side Bus<sup>7</sup>

Intel X38 Express chipset

4 GB DDR2-677 MHz ECC memory<sup>3</sup>

NVIDIA Quadro FX1700

160 GB<sup>8</sup> 10k rpm SATA 1.5 Gb/s

DVD-ROM SATA<sup>9</sup>

HP LP2475w 24-inch Widescreen LCD Monitor

HP Remote Graphics Software

HP Performance Tuning Framework

HP Scroll Mouse

3-year warranty



Power User

### HP xw6600 Workstation

Genuine Windows Vista® Business 32-bit with downgrade to Windows® XP Professional 32-bit custom installed<sup>6</sup>

Dual-Core<sup>2</sup> Intel Xeon Processor 5260<sup>4</sup>/3.33 GHz<sup>5</sup> or if predominantly Distributed Rendering use Quad-Core Intel Xeon Processor 5450/3.00 GHz

1333 MHz Front Side Bus<sup>7</sup>

4 GB DDR2-667 ECC memory for 32-bit system<sup>3</sup>

NVIDIA Quadro FX1700

146 GB<sup>8</sup> 15k rpm SAS 3 Gb/s

CD-RW/DVD-ROM Combo<sup>9</sup>

HP LP3065 30-inch Widescreen LCD Monitor

HP Remote Graphics Software

HP Performance Tuning Framework

HP Scroll Mouse

3-year warranty

## HP Recommended Configurations for Bentley MicroStation®

(All HP workstations are thoroughly tested with MicroStation)



Power User (When 64-bit MicroStation is available)

### HP xw8600 Workstation

Genuine Windows Vista® Business 64-bit with downgrade to Windows® XP Professional x64 custom installed<sup>6</sup>

2 Dual-Core<sup>2</sup> Intel Xeon® Processor 5260<sup>4</sup>/3.33 GHz<sup>5</sup>

1333 MHz Front Side Bus<sup>7</sup>

8 GB DDR2-667 ECC Memory<sup>3</sup>

NVIDIA Quadro FX5600 (1.5 GB)

(2) 146 GB<sup>8</sup> 15K rpm SAS 3 Gb/s RAID<sup>10</sup>

CD-RW/DVD-ROM Combo<sup>9</sup>

(2) HP LP3065 30-inch Widescreen LCD Monitor

HP Remote Graphics Software

HP Performance Tuning Framework

HP Scroll Mouse

HP SpacePilot

3-year limited warranty



Power User (AMD) (When 64-bit MicroStation is available)

### HP xw9400 Workstation

Genuine Windows Vista® Business 64-bit with downgrade to Windows® XP Professional x64 custom installed<sup>6</sup>

(2) Dual-Core<sup>2</sup> AMD Opteron Processor

2224SE<sup>11</sup> 3.2 GHz<sup>5</sup>

AMD64 Technology<sup>12</sup>

1GHz AMD HyperTransport™ technology<sup>7</sup>

8 GB DDR2-667 ECC memory<sup>3</sup>

NVIDIA nForce Professional 3600 and NVIDIA

nForce Pro 3050

(2) 300<sup>8</sup> GB 15k rpm SAS drive

CD-RW/DVD-ROM Combo<sup>9</sup>

NVIDIA Quadro FX5600 (1.5 GB)

(2) HP LP3065 30-inch Widescreen LCD Monitor

Or, if color is critical to your job, choose (2) HP DreamColor LP2480zx Professional Display (24-inch diagonal widescreen)

HP Remote Graphics Software

HP Performance Tuning Framework

HP Scroll Mouse

3-year limited warranty



Mobility

### HP Compaq 8510w Mobile Workstation (8710w if 17 inch screen desired)

Genuine Windows Vista® Business 64-bit with downgrade to Windows® XP Professional x64 custom installed<sup>6</sup>

Intel Core 2 Duo<sup>2</sup> processor T7800<sup>4</sup>

2.60 GHz<sup>5</sup> 4 MB L2 cache

800 MHz Front Side Bus<sup>7</sup>

15.4-inch diagonal WUXGA display

(or 17-inch if ordering the 8710w)

NVIDIA Quadro FX 570M graphics with 256

MB memory (FX1600m with 512 MB memory

if ordering the 8710w)

200 GB<sup>8</sup> 7200 rpm SATA hard drive

4 GB DDR2-667 GHz SDRAM memory<sup>3</sup>

DVD/CD RW Combo<sup>9</sup>

6.1 pounds<sup>13</sup>

HP Remote Graphics Software

HP Performance Tuning Framework

3-year limited warranty

HP recommends Windows Vista® Business

For more information about HP and Bentley solutions,  
please visit [www.hp.com/go/Bentley](http://www.hp.com/go/Bentley).

Screen shot Images courtesy of Bentley.

1. 64-bit computing on Intel architecture requires a computer system with a processor, chipset, BIOS, operating system, device drivers, and applications enabled for Intel 64 architecture. Processors will not operate (including 32-bit operation) without an Intel 64 architecture-enabled BIOS. Performance will vary depending on your hardware and software configurations. See [www.intel.com/info/em64t](http://www.intel.com/info/em64t) for more information.
2. Dual-Core and Quad-Core are new technologies designed to improve performance of multithreaded software products and hardware-aware multitasking operating systems and may require appropriate operating system software for full benefit. Not all customers or software applications will necessarily benefit from use of this technology.
3. Dual Channel is only supported when the system is configured with DDR2 symmetric memory (i.e. 2 x 256).
4. Intel's numbering is not a measurement of higher performance.
5. GHz refers to internal clock speed of the processor. Other factors beside clock speed may impact system and application performance.
6. Certain Windows Vista product features require advanced or additional hardware. See [www.microsoft.com/windowsvista/getready/hardwarereqs.mspx](http://www.microsoft.com/windowsvista/getready/hardwarereqs.mspx) and [www.microsoft.com/windowsvista/getready/capable.mspx](http://www.microsoft.com/windowsvista/getready/capable.mspx) for details. Windows Vista Upgrade Advisor can help you determine which features of Windows Vista will run on your computer. To download the tool, visit [www.windowsvista.com/upgradeadvisor](http://www.windowsvista.com/upgradeadvisor). Windows Vista Business disk also included for future upgrade if desired. To qualify for this downgrade an end user must be a business (including governmental or educational institutions) and is expected to order at least 25 customer systems with the same custom image.
7. Actual bus speed is less. Listed bus speed represents the equivalent effective data transfer rate.
8. 1 GB equals 1 billion bytes. Actual formatted capacity is less. Up to 8 GB of hard drive (or system disk) is reserved for the system recovery software.
9. Actual speeds may vary. Does not permit copying of commercially available DVD movies or other copy-right protected materials. Intended for creation and storage of your original material and other lawful uses. Double layer discs can store more data than single layer discs. Double-layer discs burned with this drive may not be compatible with many existing single-layer DVD drives and players.
10. Hardware RAID is not supported on Linux systems. The Linux kernel, with built-in software RAID, provides excellent functionality and performance. It is a good alternative to hardware-based RAID. Please visit <http://h20000.www2.hp.com/bc/docs/support/SupportManual/c00060684/c00060684.pdf> for RAID capabilities with Linux.
11. AMD's numbering is not a measurement of clock speed.
12. This system requires a separately purchased 64-bit operating system and 64-bit software products to take advantage of the 64-bit processing capabilities of the AMD Opteron 64 processor. Given the wide range of software applications available, performance of a system including a 64-bit operating system will vary.
13. Weight will vary by configuration.

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