B2W Software
Resource Requirements
& Recommendations

Version: 2023.04 – 11/8/2023

Contents

Introduction

B2W Software products can scale from individual-use, single-node installation up to a highly available deployment with thousands of users comprising multiple application tiers behind a load balancer with SQL instances using SQL Always On. The information contained in this document should apply to most deployments, but your requirements may vary depending on the usage.

B2W Software employs the following Microsoft technologies:

- Windows, Windows Server, SQL Server, SQL Server Reporting Services, Azure Cloud, Office

B2W products may also require additional third-party technologies for use of features such as Reporting, Email, SMS messaging/alerts and secure external server connection via VPN and/or reverse proxy connectivity (see *Network Requirements & Considerations* on Page 7)

Installation Prerequisites

All Microsoft products and technologies must be properly licensed at destination prior to installation of any B2W Software products.

Administrator permissions are required for certain aspects of installation and/or configuration of B2W Software products.

Cloud Hosting

B2W Products hosted in cloud environments (e.g. Azure, AWS, Google) can be subject to virtual host and/or virtual machine shutdown or deallocation. It is recommended that your cloud-hosted environment not be configured for partial use, forced power-off or shared-use times. These types of operations can cause your B2W Products to require license re-activation upon re-establishing a virtual hardware host and resources.

Supplemental Technical Documents

In addition to the Resource Requirements listed here, it is strongly recommended to refer to the following technical documents available at the B2W Community Portal:

- Windows Server Configuration and Performance Guide
- SQL Server Configuration and Performance Guide
- Kerberos Configuration for B2W Operational Suite
- B2W Operational Suite: Alerts & Notifications
- B2W Operational Suite: API Framework
- B2W Estimate: API Framework

Resource Determination Factors

B2W Software installations require the following items to be considered in determining how your environment should be structured with compute and storage resources.

High Availability/Disaster Recovery	Mission-critical deployments require highly available systems, and the environment configuration will need a larger number of compute and storage resources.
SQL Databases/Instances	The number of SQL databases and/or instances has an impact on required compute and storage resources. This includes test, staging and/or archival databases.
User/License Count	The number of users concurrently active in the system has an impact on compute and storage resources that can increase over time.
Mobile/Offline Users	B2W Employee App, Mobile Estimate and Tablet syncing have a moderate impact on compute and storage resources.
Tablet/App Database Download	The Tablet and B2W Employee App database download features require additional storage resources (minimum 50GB for each) depending on your application database size.
Third-party Integrations	Import/Export integration of B2W data to/from other systems has an impact on compute and storage resources that can increase as B2W data volume expands. This includes Job/Resource data and Telematics.
Web/Windows Services	Specific functionality requires services to be installed and utilized on B2W servers and can impact compute and storage resources.
Reporting Usage	Reporting usage can have an impact on compute and storage resources depending on the size of reports and/or the data that is being consumed.
Storage/Data Volume	High counts of Resource, Field Log, and/or Work Orders will impact compute and storage resources. Additionally, file attachments to Field Logs and Estimates will have a high impact on compute and storage resources.
Product Mix	Consider your intended B2W product mix when planning your environment. A mix of multiple products together (e.g. Estimate, Track, Maintain, Schedule) will have a high impact on compute and storage resources.
Future Scaling and Expansion	Consider how your B2W implementation will grow and/or expand over time and plan your compute and storage resources accordingly.

Environment Configuration Options

Your environment configuration will play a large role in the proper functionality and performance expectation of your B2W Software installation.

Considerations & Requirements

It is *required* that servers for the environment contain only B2W Software products for optimal performance. B2W Software products cannot be installed on any system resource that is designated for other primary roles such as, but not limited to, another application server, a domain controller, file, FTP or email server.

- Small scale node configurations are not recommended for any high-volume production and/or analytical operations.

- SQL Always On Availability Groups require:

    - SQL Server Enterprise Edition on each node.
    - File Share Witness (in primary/secondary or even-number node installations).
    - Windows Failover Clustering on each node.
    - Up to eight (8) maximum secondary replica nodes.

    Actual user counts depend greatly on compute and storage resources allocated based on the *Resource Determination Factors* on Page 4.

Estimate

See Page 8 for more detail on the following configuration options:

Configuration Type	Users	Servers	Notes
Small Scale - Tier 1	1 – 5	1	
Small Scale - Tier 2	6 – 25	1	
Small Scale - Tier 3	26 – 50	1	
Small Scale - Tier 4	51 – 100	1	
Client/Server w/Database Failover	≤ 250	2	
Remote Desktop Services[1] or Citrix[2] Client/Server	≤ 500	2+	Additional RDS Servers for higher user counts
Remote Desktop Services[1] or Citrix[2] w/Database Failover	≤ 1,000	3+	Additional RDS Servers for higher user counts

[1] Remote Desktop Services (formerly Terminal Services) requires additional licensing through Microsoft.
[2] Citrix® Virtual Apps (formerly XenApp) requires additional licensing through Citrix.

Operational Suite

For Operational Suite, a single User is determined as a User with one or more licenses assigned, regardless of license type.

See Page 8 for more detail on the following configuration options:

Configuration Type	Users	# Of Servers	Active Directory Domain[1]	Data & Report Volume
Small Scale – Tier 1	1 – 5	1		Low
Small Scale – Tier 2	6 – 25	1		
Small Scale – Tier 3	26 – 50	1		Low - Med
Small Scale – Tier 4	51 – 100	1		Med
Two Node	101 - 250	2	Required	Med – High
Simple Multi-Node	≤ 500	3	Required	
Multi-Node/Database Failover	≤ 1,000	4+	Required	
High Availability/Database Failover Load-balanced application and reporting nodes.[2]	1,000+	5+	Required	High

[1] Active Directory Domain Services with Kerberos required for multi-node environments, see Network Requirements & Considerations on Page 7.
[2] High volume reporting environments should consider load-balanced report server nodes.

File Attachments & Database Downloads

Operational Suite file attachments are no longer stored in the database, as of version 19.2.1, and will need a folder/share created for storage. Tablet and app database download folder locations should also be considered depending on your environment configuration:

Configuration Type	Storage Location
Small Scale	A folder on the host server
Two Node	A folder on the application server
Simple Multi-Node	A separate folder share on an existing server
Multi-Node Database Failover and/or Load-balanced	A separate folder share on an existing server that's not part of the database or application cluster[1]

[1] To maintain multi-node and failover data integrity it's recommended that your attachment folder share also be on a server that is highly available such as a file server, storage cluster or replicated file system.

Network Requirements & Considerations

External Access

B2W Operational Suite and B2W Estimate utilize services and processes that require external access to cloud-based HTTPS connections. Enabling TLS 1.2 is *required* for any clients/servers that will be hosting these services on your network.

Load Balancing

For B2W Operational Suite, layer 4 or transport-level load balancing is supported for the application servers and, separately, for the report servers with the following minimum requirements:

IP Version	IPv4
Front End IP	Static Network IP
Backend Pool	Pool of servers with static Network IPs
Health Probes	Required for HTTP/S (80/443) protocol ports
Load Balancing Rules	Required for HTTP (80) or HTTPS (443)

Each Load Balance Rule should be set for IPv4, TCP and a session persistence of Client IP & Protocol. The idle timeout (if applicable) should be set to the minimum.

Active Directory

For B2W Operational Suite, an Active Directory Domain and Kerberos Authentication is *required* for any configuration option with two (2) or more servers. Refer to the *Kerberos Configuration for Operational Suite* guide available on the B2W Community Portal.

Server Hardware Requirements

B2W Software products require adequate compute resources due to the nature of their operation which includes heavy computation and calculation volume. See *Resource Determination Factors* on page 4 and *Storage Considerations* on page 9. It is also recommended that all environments refer to the *B2W Software SQL Server Configuration and Performance Guide* on the B2W Community Portal for technical details.

Server-class multi-threaded processors are <u>required</u> for all server installations of Operational Suite and/or Estimate.   B2W Software recommends Intel® Xeon® Scalable, AMD EPYC™, Intel Xeon E3 v4+ or Intel Xeon E5 v4+ processors.

The following compute and storage requirements are applicable to physical and/or virtual environments:

Small Scale (1-100 Users)

The following small-scale, single-server minimum requirements are for Estimate and Operational Suite, installed separately or together. Single, B2W dedicated servers are *required*.

Configuration Level	Users	CPU Cores	Memory	Storage
Tier 1	1 – 5	4	8 GB	250 GB
Tier 2	6 – 25	4	16 GB	250 GB
Tier 3	26 – 50	8	16-32 GB	300 GB
Tier 4	51 – 100	8	32 GB	400 GB

Estimate: Standard and Large Scale (101+ Users)

Database High Availability: Up to 250 Users

Server Role	Qty	CPU Cores	Memory	Storage
Database	2	8 ea	32 GB ea	400 GB ea
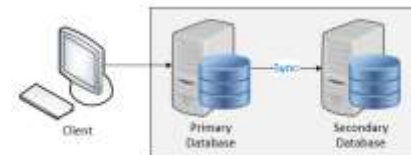
RDS/Citrix with Database HA/Failover: Up to 500 Users

Server Role	Qty	CPU Cores	Memory	Storage
Application	1+	8 ea	16 GB ea	100 GB ea
Database	2	8 ea	32 GB ea	400 GB ea

RDS/Citrix with Database HA/Failover: 500 to 1,000 Users

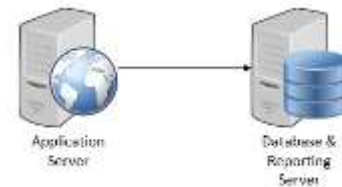| Server Role	Qty	CPU Cores	Memory	Storage
Application	2+	8 ea	32 GB ea	200 GB ea
Database	2	8 ea	32-64 GB ea	500 GB ea
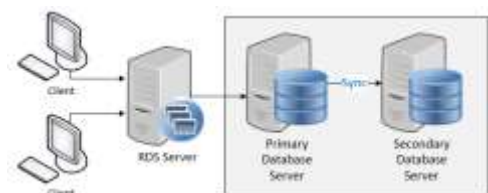
Operational Suite: Standard and Large Scale (101+ Users)

Two Node: 101 – 250 Users

Server Role	Qty	CPU Cores	Memory	Storage
Application	1	4	16 GB	100 GB
Database	1	8	32 GB	350 GB

For moderate to heavy reporting expectations, a Simple Multi-Node environment (see below) is recommended for this configuration tier.

Simple Multi-Node: Up to 500 Users

Server Role	Qty	CPU Cores	Memory	Storage
Application	1	4	32 GB	100 GB
Database	1	8	32 GB	400 GB
Reporting	1	4	16 GB	100 GB

Multiple application servers can be considered in any mutli-node setup.

Up to 1,000 Users

Server Role	Qty	CPU Cores	Memory	Storage
Application	1	8	32 GB	150 GB
Database	2	8 ea	32 GB ea	400 GB ea
Reporting	1	8	32 GB	200 GB

1,000+ Users

Server Role	Qty	CPU Cores	Memory	Storage
Application	2+	8 ea	32-64 GB ea	250 GB ea
Database	2	16 ea	64-128 GB ea	500 GB ea
Reporting	2+	8 ea	32-64 GB ea	250 GB ea

These are minimums for 1,000+ users. Based on your expected usage, workload, and licensing (See Resource Determination Factors on page 4) your environment could vary and require a larger environment. Contact B2W for assistance with this configuration tier.
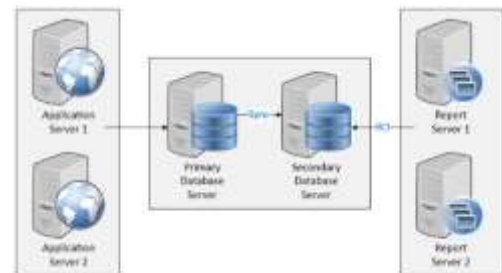
Storage Considerations

The above listed storage minimums are starting points. Your specific usage and *Resource Determination Factors* on page 4 can help determine your needs. It is *strongly* recommended that your SQL database storage be setup with appropriate disk performance configuration. Refer to *B2W Software SQL Server Configuration and Performance Guide* available on the B2W Community Portal.

Server Software Requirements

The following server software requirements have been certified for use with the latest released versions of Estimate and Operational Suite.

Additionally, refer to *Appendix A: Compatibility Matrices* regarding Microsoft's system cross-compatibility requirements and B2W product compatibility requirements.

	Estimate	Operational Suite
Operating System[1]	Windows Server 2016 – 2022	
Internet Information Services (IIS)	8.0 – 10.0	
Microsoft .NET Framework[2]	4.8	
Microsoft SQL Server & Reporting	Express[3], Standard or Enterprise[4] Edition: 2014 SP3 – 2022	Standard or Enterprise[4] Edition: 2014 SP3 – 2022
Email Integration	SMTP configuration	Built-in service

[1] Windows Server Standard or Datacenter Desktop Experience. Core/CLA and Essentials editions are not supported
[2] Microsoft .NET 3.5 is a prerequisite for all installations.
[3] SQL Express Editions do not support Always On Availability Groups and are not supported for user counts beyond five (5)
[4] Enterprise Edition is required for Always On Availability Groups

Operational Suite Additional Requirements

Certain functionality and features in Operational Suite may require installation of additional Windows Services and dependencies. Based on your installation configuration these services may require internet access:

- Operational Suite API – Refer to *B2W Operational Suite: API Framework* on the Community Portal for more information
- Alerts & Notifications – Refer to *B2W Operational Suite: Alerts & Notifications* on the Community Portal for more information
- EDS - Inform integration for Operational Suite

Estimate Additional Requirements

- Estimate API – Refer to *B2W Estimate: API Framework* on the Community Portal for more information
- Audit Trail Service utilizes Windows Message Queuing and requires users to login to network-based Estimate environments with a domain account.
- FTP Services 7.5 is required to use the Estimate Auto-update feature
- Management Reporting requires SQL Server Reporting Services
- Prior to Estimate 22.1, Embedded Excel Workbooks or DOT Item Database Add-ins require Microsoft Excel

Client Workstation Requirements

Intel Core™, Intel Xeon, or AMD Ryzen™ processors are recommended for client workstations. The minimum requirements are as follows:

Requirement	Estimate	Operational Suite
CPU Cores	4	
CPU Type	Intel Xeon, Core or AMD Ryzen	
Memory (RAM)	4 GB	
Hard Disk	10 GB	
Min. Display Resolution	1280 x 1024 pixels	
Operating System[1]	Windows 10 – 11[1]	
Microsoft .NET Framework	4.8	Not required
Internet Browser[2]	Microsoft Edge Mozilla Firefox Google Chrome	

[1] Windows Home, Basic and/or Education editions of Client Operating systems are not supported

[2] A modern browser is required for B2W Estimate Enterprise Edition's Custom Properties feature

The following additional requirements apply to a stand-alone, single-user installation:

Microsoft SQL Server and Reporting	2014 SP3 – 2022 Express	Not applicable

Tablet Device Requirements

The following requirements are for Operational Suite Tablet app:

Minimum Storage Capacity	16 GB
RAM	4 GB
Operating System[1]	iOS 15.0 – 17.0 Android 11.0 – 14.0
Minimum Screen Resolution	1024 x 768
Minimum Screen Size	7.0 in.
Synchronization Requirements	High-speed internet connection A VPN connection is required to support secure synchronization with the B2W server when not connected to your network.

[1] Tablet operating systems can be deprecated by the manufacturer at any time without notice.

- For requirements and recommendations with Inform Mobile, please refer to:
  https://mobile.b2winform.com
- For requirements and recommendations with B2W Employee App, please refer to:
  https://docs.b2wcloud.com/FEAHelp

SQL Server Requirements & Performance

B2W Software products require the following:

- Microsoft SQL Server as their database engine.
- SQL Instance Requirements:
  - Small Scale: A B2W-dedicated, single-instance SQL Server is *required*. Cannot be shared with non-B2W applications, other SQL instances or other services.
  - Standard and Large Scale: SQL instances can co-exist on a dedicated SQL Server, but the instance must be allocated to meet the Core and Memory resource sizes for the B2W environment (See *Server Hardware Requirements* on page 8).
  - An English instance of SQL Server using the default collation setting named: SQL_Latin1_General_CP1_CI_AS
- Reporting Services which is used by Operational Suite and Estimate Management Reporting as their analytics engine.

Refer to *Server Software Requirements* on page 10 to view B2W supported versions and editions.

SQL Editions

B2W Software supports SQL Server Express (limited), Standard or Enterprise editions for use with our products. For more details on SQL Editions, see our *B2W Software SQL Server Configuration and Performance Guide* available on the B2W Community Portal.

SQL License Models

Server + CAL	This model requires a license for each physical and/or virtual SQL Server, and a license for each user and/or devices connecting to that server.
Per Core	This model currently is a 4-core minimum per physical or virtual processor. The major benefit of this option is that there is no requirement to try to quantify the number of users or devices (CALs) accessing the SQL Server(s).

SQL Server Reporting Services

Reporting Services (SSRS) generates the reports available in the Operational Suite and Estimate Management Reporting products. While light use of reports has little effect on performance, moderate to heavy reporting can have an adverse effect. Your expected usage of reporting should be a determining factor in your B2W installation environment plan. For more information, see *Environment Configuration Options* on page 5.

SQL Server Performance

See the *B2W Software SQL Server Configuration and Performance Guide* on the B2W Community Portal for detailed technical information.

Appendix A: Compatibility Matrices

System Software Compatibility

Server	.NET 4.7.2	4.8	SQL Server 2014	2016	2017	2019	2022
Windows Server 2016	✓	+	SP3	SP2	●	CU22	●
Windows Server 2019	✓	+	SP3	SP2	●	CU22	●
Windows Server 2022		✓			●	CU22	●

Client	.NET 4.7.2	4.8	SQL Server 2014	2016	2017	2019	2022
Windows 10 (20H2-22H2)	✓	+	SP3	SP2	●	CU22	●
Windows 11 (21H2-22H2)		✓			●	CU22	●

- ● Compatible
- **+** Can be installed
- ✓ Default for OS
- SP or CU Service Pack or Cumulative Update required

Upcoming Support End-of-life

SQL Server 2014 (July 2024)

B2W Product Software Compatibility

Product	Windows 10 - 11	Windows Server 2016	2019	2022	SQL Server 2014-17	2019	2022	.NET 4.7.2	4.8
Estimate									
22.1	●	●	●	○	●	○		●	
22.2	●	●	●	○	●	○			●
23.1 – 23.3	○	●	●	○	●	○	○		●

Product	Windows 10 - 11	Windows Server 2016	2019	2022	SQL Server 2014-17	2019	2022	.NET 4.7.2	4.8
Operational Suite									
21.3 – 22.1	●	●	●	○	○	○		●	
22.2	●	●	●	○	○	2017 Mode		●	
23.1 – 23.2	●	●	●	○	○	2017 Mode	2017 Mode		●
23.3	●	●	●	○	○	○	○		●

- ● Compatible

- ○ Refer to the System Software Compatibility Matrix above for specific Windows/SQL compatibilities as older versions of SQL Server may not be compatible with newer versions of Windows or Windows Server.

- Mode Compatibility Mode required

Appendix B: Document Change History

v2023.04 – November 8, 2023

- Windows Server 2012 and 2012 R2 support has ended (p. 13)
- SQL Server 2019 – CU22 is now required for Ops 23.3+ (p. 13)
- SQL 2017 Compatibility Mode no longer required for Ops 23.3+ (p. 13)
- Remove Internet Explorer as a requirement for specific Estimate feature, any modern browser will work (p. 11)
- Updated email integration requirements for Estimate and Ops (p. 10)
- Mobile Support ends (p. 11)
  - Android 10`
  - iOS 13 & 14
- Mobile Version supported (p. 11)
  - Android 14
  - iOS 17

v2023.03 – July 31, 2023

- Added External Access section for connectivity to external cloud services (p. 7)

v2023.02 – April 26, 2023

- Added Upcoming Support EOL dates (p. 13)
- SQL Server 2022 supported Estimate & Ops (p. 10,13)
- .NET 4.8 support for Ops (p. 10,13)
- Microsoft Excel requirement for Estimate removed (p. 11)
- Support has ended for Windows 8.1 (p. 13)
- Mobile Support ends (p. 11)
  - iOS 12
  - Android 9

v2023.01 – January 9, 2023

- iOS 16 for tablet now supported (p. 11)
- Tablet device minimum RAM to 4GB (p. 11)
- .NET 4.8 support for Estimate (p. 10,11,13)

v2022.03 – October 18, 2022

- Support has ended for SQL Server 2012, all editions (p. 10,11,13)
- iOS 16 for phone now supported (p. 11)
- Third party technologies re-worded for clarity (p. 3)

v2022.02 – April 28, 2022

- Mobile Support ends (p. 11)
  - iOS 11.0
  - Android 7-8