



## **F2**

# F2 Hardware Requirements

Version 11

Updated: 07.08.2023

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# Introduction

This document describes the guidelines of a high performance F2 system.

In large-scale installations, the requirements can diverge due to existing environment/infrastructure.

If the use of F2 diverge from standard use, (many large searches, large number of documents etc.) or there are web services build on top of the F2 installation, the requirements can be higher than the ones specified below.

Talk to cBrain regarding the specific installation and demands to ensure the best possible performance.

## PC

| Component          | Minimum requirements                                  | Normal performance                                    | Comments                                                        |
|--------------------|-------------------------------------------------------|-------------------------------------------------------|-----------------------------------------------------------------|
| CPU                | Dual core @ 1,9 GHz                                   | Core-I5 or higher                                     |                                                                 |
| Architecture       | 64 bit                                                | 64 bit                                                |                                                                 |
| RAM                | 4 GB (1 GB dedicated to F2)                           | 8 GB (2 GB dedicated to F2)                           |                                                                 |
| Disk               | 8 GB free space                                       | SSD 20 GB free space                                  |                                                                 |
| NIC                | 100 Mbit/s                                            | 1 Gbit/s Wireless 54 Mbit                             |                                                                 |
| Display            | 1280 x 1024                                           | 1920 x 1080 (HD)                                      | On dual chip: set up F2 to run on integrated chip               |
| Other requirements | Performance tests must be made on a new installed PC. | Performance tests must be made on a new installed PC. | For VDI environment we need a physical PC for baseline testing. |

## Application server

We have an option to scale by adding more application servers. This should only be done when they are overloaded with respect to CPU or I/O. Adding enough memory in the servers will help, especially after version 6.1 where we can run in 64 bit mode.

| Component                      | 0-199 users               | 200-999 users                         | 1000-1999 users                       | 2000-5999 users <sup>1</sup>                          | Comments                                                                                                                        |
|--------------------------------|---------------------------|---------------------------------------|---------------------------------------|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| CPU                            | Quad core @ 2-3 GHz       | Dual Quad core @ 2-3 GHz              | Dual Quad core @ 2.5 -3 GHz           | Dual Quad core @ 2.5 -3 GHz                           |                                                                                                                                 |
| Architecture                   | 64 bit                    | 64 bit                                | 64 bit                                | 64 bit                                                |                                                                                                                                 |
| RAM                            | 8 GB                      | 16 GB                                 | 32 GB                                 | 64 GB                                                 |                                                                                                                                 |
| NIC                            | 1 Gbit/s                  | 2X1 Gbit/s                            | 2X1 Gbit/s                            | 1X1 Gbit/s for Net<br>1X10 Gbit/s for database server | For 200+ users, use one NIC for database connection and one for user communication.<br>F2 should be prioritised on the network. |
| Disk Operations (Partitioning) | 300 GB<br>C: System 80 GB | 370 GB (400 IOPS)<br>C: System 120 GB | 370 GB (400 IOPS)<br>C: System 120 GB | 370 GB (400 IOPS)<br>C: System 120 GB                 | cSearch is an add-on module, so the disk space is only necessary if cSearch is chosen.                                          |

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<sup>1</sup> Depending on the usage pattern and infrastructure of the deployment, more than one application server may be required.

| Component          | 0-199 users                                                                                                                  | 200-999 users                                                                                                                | 1000-1999 users                                                                                                              | 2000-5999 users <sup>1</sup>                                                                                                 | Comments                                                                                     |
|--------------------|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
|                    | D: Application<br>100 GB<br><br>E: Logs 20 GB<br><br>F: cSearch Index<br>100 GB<br>(Required if<br>cSearch module<br>chosen) | D: Application<br>100 GB<br><br>E: Logs 50 GB<br><br>F: cSearch Index<br>100 GB<br>(Required if<br>cSearch module<br>chosen) | D: Application<br>100 GB<br><br>E: Logs 50 GB<br><br>F: cSearch Index<br>100 GB<br>(Required if<br>cSearch module<br>chosen) | D: Application<br>100 GB<br><br>E: Logs 50 GB<br><br>F: cSearch Index<br>100 GB<br>(Required if<br>cSearch module<br>chosen) | Depending on system use, cSearch may require a dedicated server for systems with 999+ users. |
| Other requirements | If virtual:<br>Dedicated resources                                                                                           | If virtual:<br>Dedicated resources                                                                                           | If virtual:<br>Dedicated resources                                                                                           | If virtual:<br>Dedicated resources                                                                                           |                                                                                              |

## Database server

Different parts of the database (data, document content, log, tempDB) should be placed on disks appropriate for the use (i.e. tempDB should be very fast for random access, document content should allow for fast sequential access etc.).

Depending on the hardware setup of the customer, cBrain will give best practice recommendations.

For up to 100 users, the database server can be virtual after a discussion with cBrain.

If you need an archive database or databases from other systems on the same server, it needs to be in a separate instance and have extra RAM.

The specifications are for a dedicated server for F2.

| Component                                                                      | 0-199 users                         | 200-999 users                       | 1000-1999 users                    | 2000-5999 users              | Comments                                                                                                                                                                                    |
|--------------------------------------------------------------------------------|-------------------------------------|-------------------------------------|------------------------------------|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Multiple databases on the same database instance as the F2 production database | No                                  | No                                  | No                                 | No                           | No other databases (than the customer's F2 Prod. database) should be present on same database instance. Otherwise, the resources are shared, and users can experience degraded performance. |
| CPU                                                                            | Dual Quad core processors @ 2.5 GHz | Dual Quad core processors @ 2.5 GHz | Dual Penta core processors @ 3 GHz | 32+ core processors @ 3 GHz+ |                                                                                                                                                                                             |
| Architecture                                                                   | 64 bit                              | 64 bit                              | 64 bit                             | 64 bit                       |                                                                                                                                                                                             |
| RAM                                                                            | 96 GB (the more the better)         | 160 GB                              | 280 GB                             | 1 TB                         |                                                                                                                                                                                             |

| Component                      | 0-199 users                                                                                                           | 200-999 users                                                                                                         | 1000-1999 users                                                                                                         | 2000-5999 users                                                                                                         | Comments                                                                                                           |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
|                                |                                                                                                                       |                                                                                                                       | SQL Server Enterprise Edition is required                                                                               | SQL Server Enterprise Edition is required                                                                               |                                                                                                                    |
| Disk Storage                   | Space for current and future files.                                                                                   | Space for current and future files.                                                                                   | Space for current and future files.                                                                                     | Space for current and future files.<br>High performance IO SAN                                                          | Large demands for data storage can change the requirements for the server specifications.                          |
| NIC                            | 1 Gbit/s                                                                                                              | 2x1 Gbit/s<br>Use one NIC for application server connection and one for net/user communication.                       | 2x1 Gbit/s<br>Use one NIC for application server connection and one for net/user communication.                         | 2x10 Gbit/s<br>2x10Gbit/s for SAN                                                                                       |                                                                                                                    |
| Disk Operations (Partitioning) | 680 GB<br>C: System 80 GB<br>D: SQL Bin (SQL installation) must be different from the drive where you have swap file. | 680 GB<br>C: System 80 GB<br>D: SQL Bin (SQL installation) must be different from the drive where you have swap file. | 1150 GB<br>C: System 120 GB<br>D: SQL Bin (SQL installation) must be different from the drive where you have swap file. | 1620 GB<br>C: System 120 GB<br>D: SQL Bin (SQL installation) must be different from the drive where you have swap file. | Sizing of DB server in general, talk to cBrain.<br>2000+ users need verification by cBrain CTO/operations manager. |

| Component      | 0-199 users                                                                                                                                                                                                                       | 200-999 users                                                                                                                                                                                                                                                                                                                                                                      | 1000-1999 users                                                                                                                                                                                                                                                                                                                                                                    | 2000-5999 users                                                                                                                                                                                                                                                                                                                                                                                        | Comments |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
|                | <p>Data storage<br/>SAN minimum<br/>1000 IOPS</p> <p>E: DB Data 300<br/>GB</p> <p>F: Logs 100 GB<br/>"If simple<br/>recovery"</p> <p>G: TempDB<br/>separate disk<br/>system SSD 100<br/>GB tempDB</p> <p>H: Backup 100<br/>GB</p> | <p>Data storage<br/>SAN minimum<br/>1000 IOPS</p> <p>E: DB Data 300<br/>GB</p> <p>F: Logs 100 GB<br/>"If simple<br/>recovery"</p> <p>G: TempDB<br/>separate disk<br/>system SSD 100<br/>GB tempDB</p> <p>DB on separate<br/>disk system<br/>(internal via PCI)<br/>(minimum 100K<br/>IOPS)</p> <p>TempDB in 8 file<br/>groups</p> <p>H: Backup is<br/>storage use +<br/>100 GB</p> | <p>Data storage<br/>SAN minimum<br/>1000 IOPS</p> <p>E: DB Data 300<br/>GB</p> <p>F: Logs 400 GB<br/>"If simple<br/>recovery"</p> <p>G: TempDB<br/>separate disk<br/>system SSD 130<br/>GB tempDB</p> <p>DB on separate<br/>disk system<br/>(internal via PCI)<br/>(minimum 100K<br/>IOPS)</p> <p>TempDB in 8 file<br/>groups</p> <p>H: Backup is<br/>storage use +<br/>200 GB</p> | <p>Data storage<br/>SAN minimum<br/>2000 IOPS</p> <p>E: DB Data 300<br/>GB</p> <p>F: Logs 800 GB<br/>"If simple<br/>recovery"</p> <p>G: TempDB 200<br/>GB should be<br/>locally connected<br/>NVMe based<br/>storage.</p> <p>DB on separate<br/>disk system<br/>(internal via PCI)<br/>(minimum 250K<br/>IOPS)</p> <p>TempDB in 8 file<br/>groups</p> <p>H: Backup is<br/>storage use +<br/>200 GB</p> |          |
| SAN connection |                                                                                                                                                                                                                                   | Minimum 10 Gbit/s connection to SAN                                                                                                                                                                                                                                                                                                                                                | Minimum 10 Gbit/s connection to SAN                                                                                                                                                                                                                                                                                                                                                | Minimum 10 Gbit/s connection to SAN                                                                                                                                                                                                                                                                                                                                                                    |          |

| <b>Component</b>          | <b>0-199 users</b> | <b>200-999 users</b>                  | <b>1000-1999 users</b>                | <b>2000-5999 users</b>                | <b>Comments</b> |
|---------------------------|--------------------|---------------------------------------|---------------------------------------|---------------------------------------|-----------------|
| Server type/<br>resources |                    | If virtual:<br>Dedicated<br>resources | If virtual:<br>Dedicated<br>resources | If virtual:<br>Dedicated<br>resources |                 |

## Integration server

We have an option to scale by adding more integration-servers. This should only be done when they are overloaded with respect to CPU or I/O. Adding enough memory in the servers will help, especially after version 6.1 where we can run in a 64 bit mode.

| Component                      | 0-199 users                                                         | 200-999 users                                                                   | 1000-1999 users                                                                 | 2000-5999                                                                        | Comments |
|--------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------|
| CPU                            | Quad core @ 2-3 GHz                                                 | Dual Quad core @ 2-3 GHz                                                        | Dual Quad core @ 2.5-3 GHz                                                      | Dual Quad core @ 2.5-3 GHz                                                       |          |
| Architecture                   | 64 bit                                                              | 64 bit                                                                          | 64 bit                                                                          | 64 bit                                                                           |          |
| RAM                            | 16 GB                                                               | 32 GB                                                                           | 64 GB                                                                           | 128 GB                                                                           |          |
| NIC                            | 1 Gbit/s                                                            | 2X1 Gbit/s                                                                      | 2X1 Gbit/s                                                                      | 2X10 Gbit/s                                                                      |          |
| Disk Operations (Partitioning) | 200 GB<br>C: System 80 GB<br>D: Application 100 GB<br>E: Logs 20 GB | 240 GB (400 IOPS)<br>C: System 120 GB<br>D: Application 100 GB<br>E: Logs 20 GB | 270 GB (400 IOPS)<br>C: System 120 GB<br>D: Application 100 GB<br>E: Logs 50 GB | 270 GB (1000 IOPS)<br>C: System 120 GB<br>D: Application 100 GB<br>E: Logs 50 GB |          |
| Other requirements             | If virtual:<br>Dedicated resources                                  | If virtual:<br>Dedicated resources                                              | If virtual:<br>Dedicated resources                                              | If virtual:<br>Dedicated resources                                               |          |

## Mobile server

Mobile server requirements can diverge due to different use scenarios i.e. self-service solutions, heavy use for third party integration services, etc.

| Component                      | 0-199 users                                                        | 200-999 users                                                                  | 1000-1999 users                                                                | 2000-5999 users                                                                 | Comments                                                                               |
|--------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|
| CPU                            | Quad core @ 2-3 GHz                                                | Quad core @ 2-3 GHz                                                            | Quad core @ 2-3 GHz                                                            | Quad core @ 2-3 GHz                                                             |                                                                                        |
| Architecture                   | 64 bit                                                             | 64 bit                                                                         | 64 bit                                                                         | 64 bit                                                                          |                                                                                        |
| RAM                            | 8 GB                                                               | 16 GB                                                                          | 32 GB                                                                          | 64 GB                                                                           | If the mobile server is used intensively as "REST-hub" for integrations, add 4 GB RAM. |
| NIC                            | NIC: 1 Gbit/s                                                      | NIC: 1 Gbit/s                                                                  | NIC: 1 Gbit/s                                                                  | NIC: 10 Gbit/s                                                                  |                                                                                        |
| Disk Operations (Partitioning) | 140 GB<br>C: System 80 GB<br>D: Application 40 GB<br>E: Logs 20 GB | 210 GB (400 IOPS)<br>C: System 120 GB<br>D: Application 40 GB<br>E: Logs 50 GB | 210 GB (400 IOPS)<br>C: System 120 GB<br>D: Application 40 GB<br>E: Logs 50 GB | 210 GB (1000 IOPS)<br>C: System 120 GB<br>D: Application 40 GB<br>E: Logs 50 GB |                                                                                        |
| Other requirements             | If virtual:<br>Dedicated resources                                 | If virtual:<br>Dedicated resources                                             | If virtual:<br>Dedicated resources                                             | If virtual:<br>Dedicated resources                                              |                                                                                        |