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4 Key Advantages of Deploying Your Mathematical Optimization Solver on a Dedicated Server

Management Paper

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Perhaps your company – like thousands of leading global companies from over 50 different industries – has decided to invest in a state-of-the-art mathematical optimization solver to help you tackle your complex business problems and make optimal, data-driven decisions that maximize your operational efficiency and profitability.

After making that initial decision to invest in this technology, you will face another critical choice: How does your company want to deploy the mathematical optimization solver?

Essentially, there are three different deployment options. You can run the mathematical optimization solver on:

- individual workstations (on your company's private cloud or in-house system),
- a hosted cloud environment,
- or on one or more dedicated servers (on your company's private cloud or in house system).

There are pros and cons to each of these three approaches, and ultimately you should choose the deployment option that best meets the needs of your business.

For example, deploying the mathematical optimization solver via individual, in-house workstations – which is the typical, traditional deployment method – might be suitable for a small project or a startup company. But it's not the most robust or cost-effective option for companies that are looking to kickstart significant mathematical optimization projects, which involve multiple users utilizing the solver for various applications in different business areas (as this would require the purchase of numerous software licenses).

Another possibility is to deploy the mathematical optimization solver via a hosted cloud environment. Although this option is an easy, flexible, and cost-effective way for companies to get up and running with a mathematical optimization solver, it is not the best alternative for businesses that have data security concerns or that plan on using the solver technology extensively and in a distributed fashion (as that would be very expensive to do with a pay-as-you-go, hosted cloud setup).

The third deployment option is to run the mathematical optimization solver on one or more dedicated servers (either on your company's private cloud or your in-house system). Although this alternative may require a higher investment up front, it delivers major business benefits and is often the most efficient, robust, and cost-effective approach over the long haul.

In this management paper, we will explore the four key advantages of deploying a mathematical optimization solver on a dedicated server.

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Key Advantage #1: Versatility

Perhaps the most significant advantage of the dedicated server deployment is that it gives your company the versatility to:

- Use your mathematical optimization solver in an unlimited number of applications across your organization.
- Allow an unlimited number of users to access and utilize your mathematical optimization applications.
- Accommodate the heavy use of various mathematical optimization applications with powerful queuing and load balancing functionality.
- Create new mathematical optimization applications over time – so as the adoption of mathematical optimization in your organization increases, the dedicated server (with its clustering capability) can expand to meet the changing needs of your organization.

No matter how many different users you have or how many different mathematical optimization applications you build and deploy, a dedicated server has the flexibility to fulfill your requirements. The dedicated server approach provides scalable and sustainable solution that can cater for all your mathematical optimization needs, now and in the future.

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Key Advantage #2: Cost Effectiveness

The second key advantage of deploying your mathematical optimization solver on a dedicated server is that it is by far the most cost-effective approach.

The dedicated server deployment requires a greater initial investment than the other two deployment options, but in the long run you will come out ahead as you will save on license costs.

With the dedicated server approach, you can support an unlimited number of users and applications – at no additional cost.

With the individual workstation or hosted cloud approach, you will have to pay an additional license fee every time you add a new user or launch a new application on a different computer – and, over time, this will probably end up being more expensive.

A dedicated server provides a single point of administration that can efficiently handle all of your users and applications at a significantly lower cost than the other deployment options.

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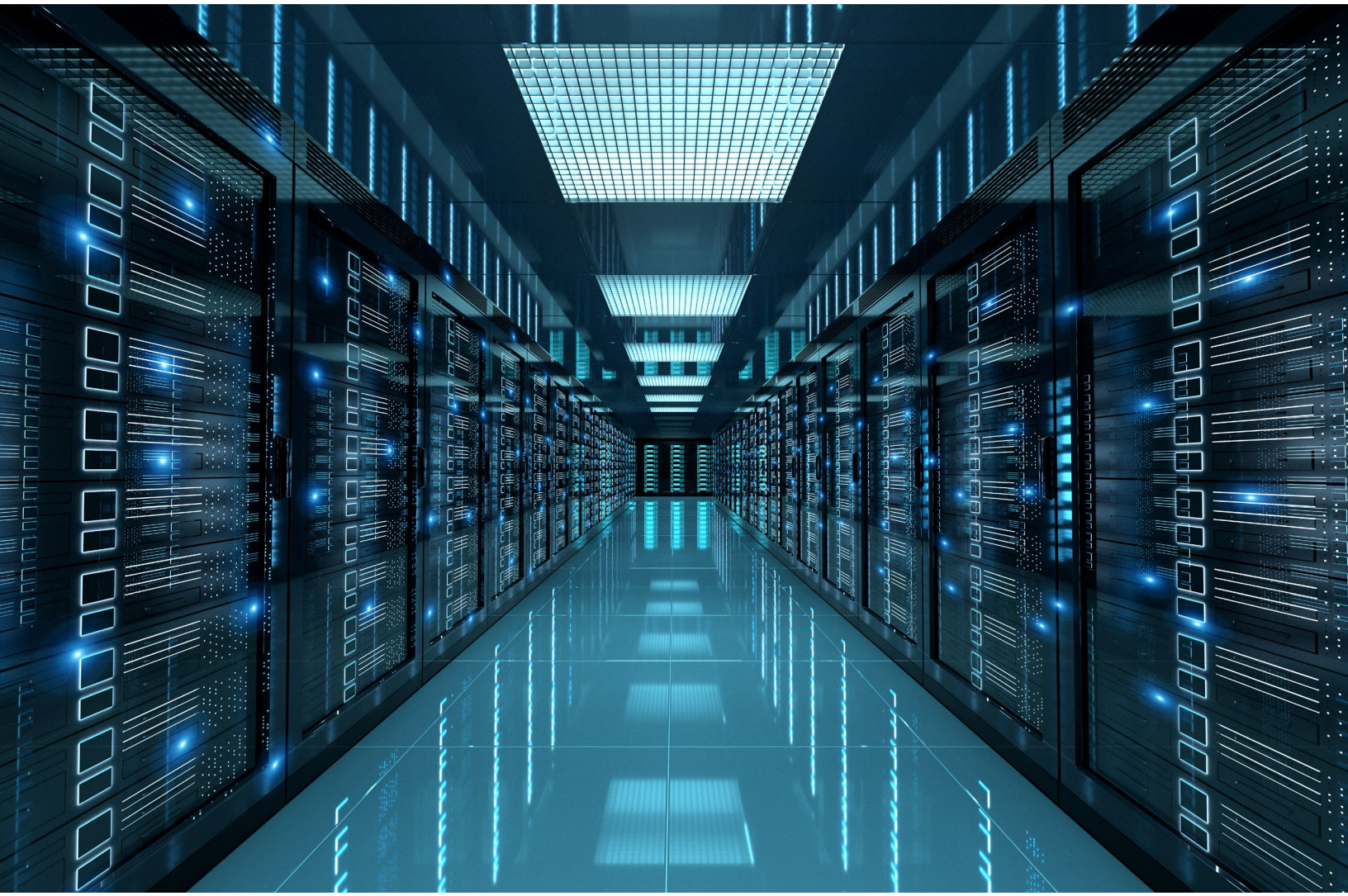
Key Advantage #3: Security

In today's business world, data is a precious commodity, and companies go to great lengths to safeguard the security of their data and systems.

And security is one of the key advantages of deploying your mathematical optimization application on a dedicated server – as, with such an approach, you can maintain complete control of all your data throughout the application chain.

If you opt for a hosted cloud deployment, you will put your data on a third-party hosted cloud environment – and this makes it harder to ensure your all company's security requirements are met at all times.

With the dedicated server deployment approach, you can rest assured that your mathematical optimization application will be secure.



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Key Advantage #4: Robustness

The fourth and final advantage of deploying your mathematical optimization application on a dedicated server is robustness. Indeed, you can get maximum performance from your mathematical optimization solver when it's embedded on a dedicated server – ensuring that it runs with the utmost speed, power, and efficiency.

A mathematical optimization solver is a very compute-intensive piece of technology and – in order to deliver the most robust, rapid, and reliable problem-solving capabilities – it requires dedicated, fast computer processor cores. A dedicated server provides this computing horsepower. Without dedicated compute cores, solve times become unpredictable.

By deploying your mathematical optimization solver on a dedicated server, you get a guarantee of the maximum performance – so that you can generate the best possible solutions to your business problems in the shortest amount of time.

A dedicated server also offers a rich set of features for managing multiple jobs, making it easy for your IT staff to choose and control which mission-critical jobs should run first. This is particularly important for companies with multiple users and multiple mathematical optimization applications.

With the dedicated server deployment approach, your company can unleash the full power of your mathematical optimization solver and get the most out of your investment in this technology.

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Conclusion

For the reasons highlighted in the management paper – versatility, cost effectiveness, security, and robustness – a growing number of companies are deciding to deploy their mathematical optimization solver on a dedicated server, like the Gurobi Compute Server.

At the end of the day, however, there is no right choice when it comes to deciding between the individual workstations, hosted cloud, or dedicated server type of deployment – it all comes down to what is best for your business.

If your company is looking to fully harness the power and impact of mathematical optimization in your organization and maximize the ROI on your solver, then a dedicated server deployment is the best choice for you.

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