

The background features three thick, curved lines. A blue line starts from the left and curves downwards. A red line starts from the left, curves upwards to form a peak, and then curves downwards. A grey line starts from the bottom left, curves upwards to form a broad peak, and then curves downwards. The lines are thick and have a slightly pixelated or hand-drawn appearance.

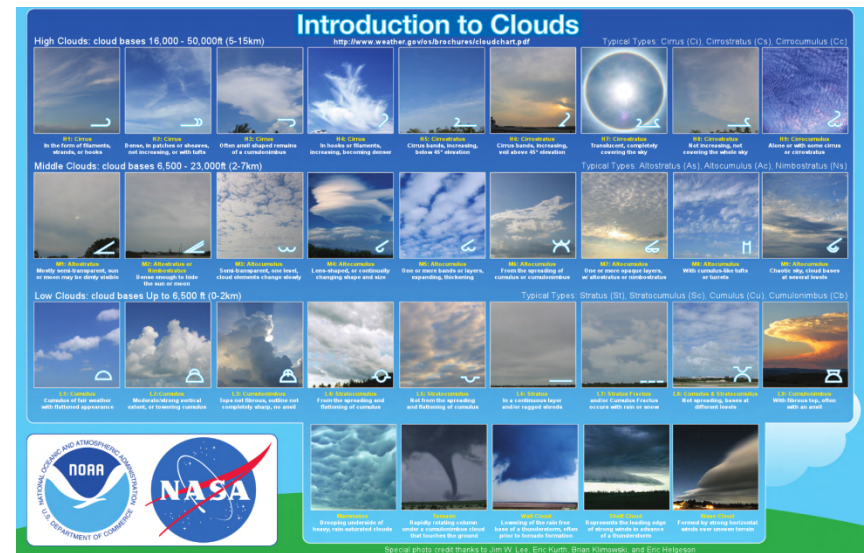
Benefits, risks and recommendations

CLOUD COMPUTING

THE CLOUD(S)

“A cloud is a visible **mass** of *liquid droplets* or *frozen crystals* made of **water** and/or various **chemicals** suspended in the **atmosphere** above the surface of a **planetary body**.”

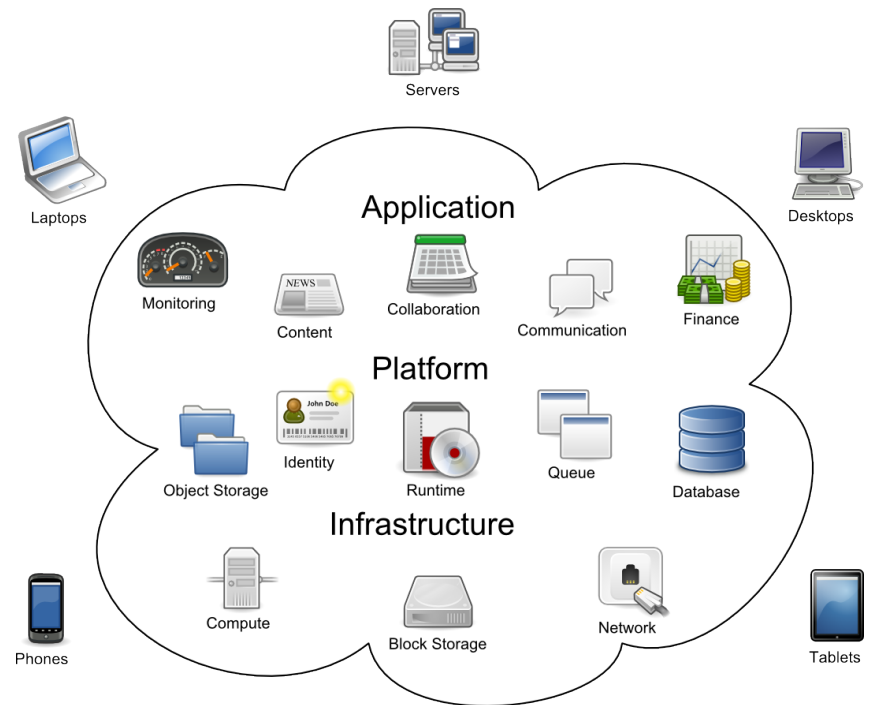
source: wikipedia



source: weather.gov

CLOUD COMPUTING

“The cloud is a **business model** of IT (computing) provision based on **virtualization** and **distributed computing**, whereby highly abstracted and **shared resources**, are provided “on demand” over the **Internet** with a “**pay as you go**” billing system.”



source: wikipedia

An abstract graphic consisting of three curved lines. A blue line starts from the left and curves downwards. A red line starts from the blue line, curves upwards to form a peak, and then curves downwards. A grey line starts from the bottom left, curves upwards to form a broad peak, and then curves downwards. The text 'THE BENEFITS' is centered below the grey line.

THE BENEFITS

BENEFITS OF CLOUD COMPUTING



- **Economies of scale (and security)**
 - Rapid, smart scaling of resources
 - Security measures (filtering, patch management, hardening of virtual machine instances and hypervisors, etc)
- **Improved management**
 - Standardised interfaces
 - Staff specialization & experience
 - Efficient updates and defaults

source: ENISA



THE RISKS

(MAIN) RISKS OF CLOUD COMPUTING



- **Policy and Organizational**
 - Loss of governance
 - Lock-In
- **Technical**
 - High value assets
 - Isolation failure
- **Legal**
 - Data protection
 - Intellectual property

source: ENISA

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THE RECOMMENDATIONS

RECOMMENDATIONS OF CLOUD COMPUTING

- **Assess the risk of adoption**
- **Compare different offers**
- **Obtain assurance (check SLAs)**
- **Reduce the assurance burden**
- Other areas of interest:
 - Data Protection
 - Data Security
 - Transfer
 - Law Enforcement Access
 - Confidentiality and Non-disclosure
 - Intellectual Property
 - Risk Allocation and limitation of liability
 - Change of Control

source: ENISA

The image features three thick, curved lines on a white background. A blue line starts from the left edge and curves downwards. A red line starts from the blue line, curves upwards to form a peak, and then curves downwards. A grey line starts from the bottom left, curves upwards to form a broad peak, and then curves downwards. The text 'THE AUDIENCE' is centered in the lower half of the image.

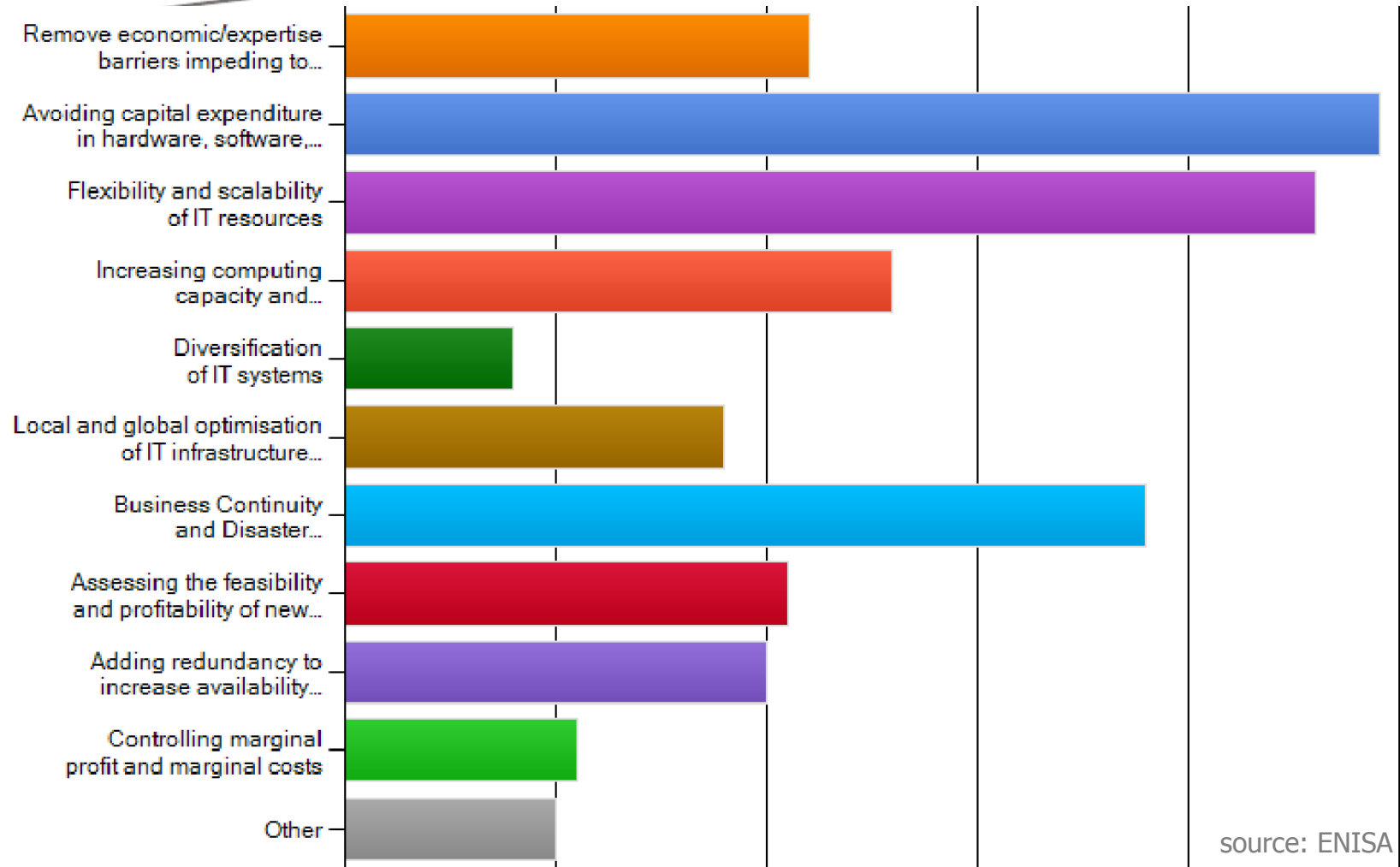
THE AUDIENCE

TARGET AUDIENCE OF CLOUD COMPUTING

- **Big corporations ?**
 - cost efficiency
 - resource downsizing
 - outsourcing of specific, non core-business services
 - *private cloud initiatives*
- **Governments ?**
 - mutualisation
 - specific, non central gov. services
 - *private cloud initiatives*
- **PMEs ?**
 - less(no) internal resources/"maîtrise"
 - access to many (new) services
 - *outsourcing to public cloud services*

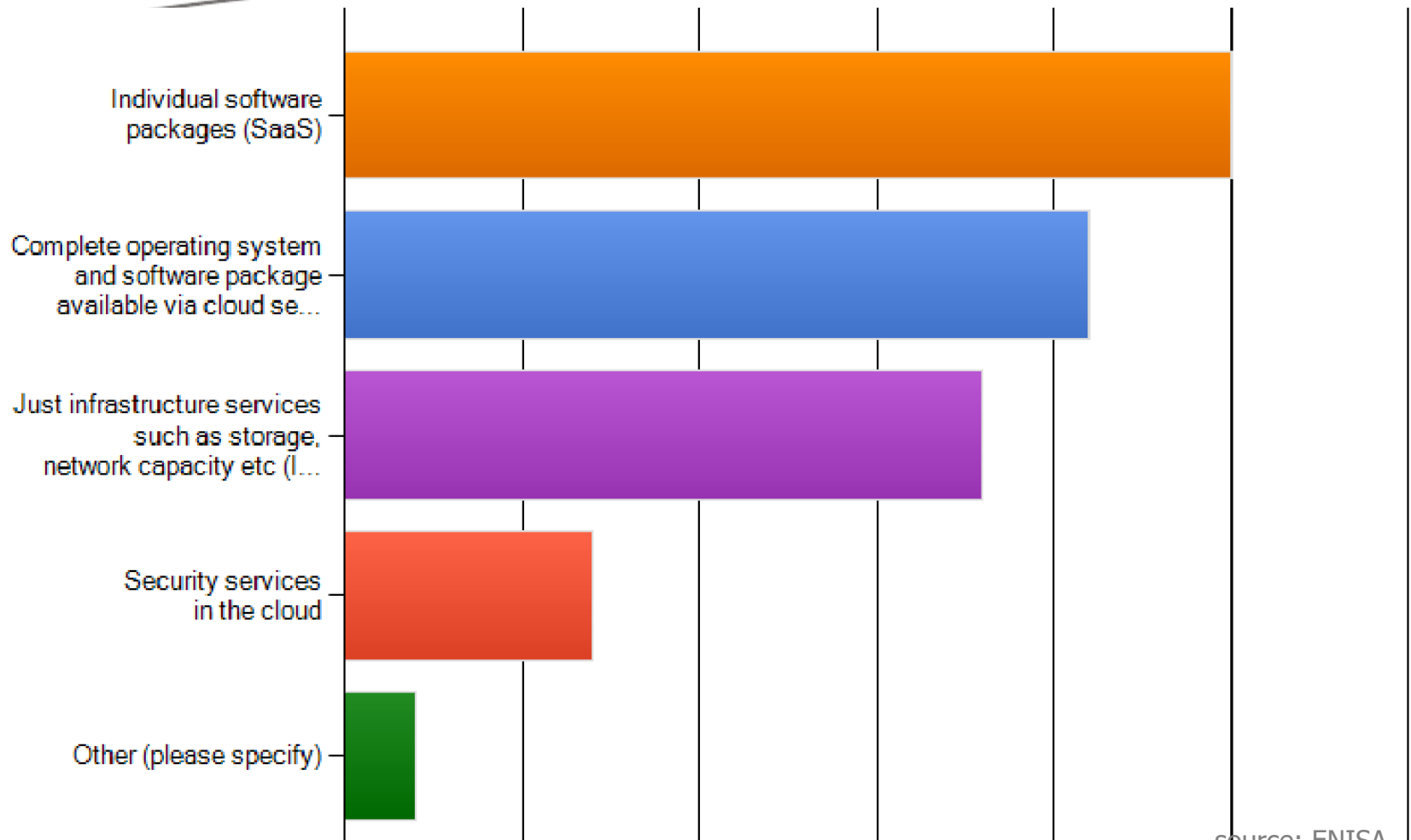


ENISA SME SURVEY - REASONS



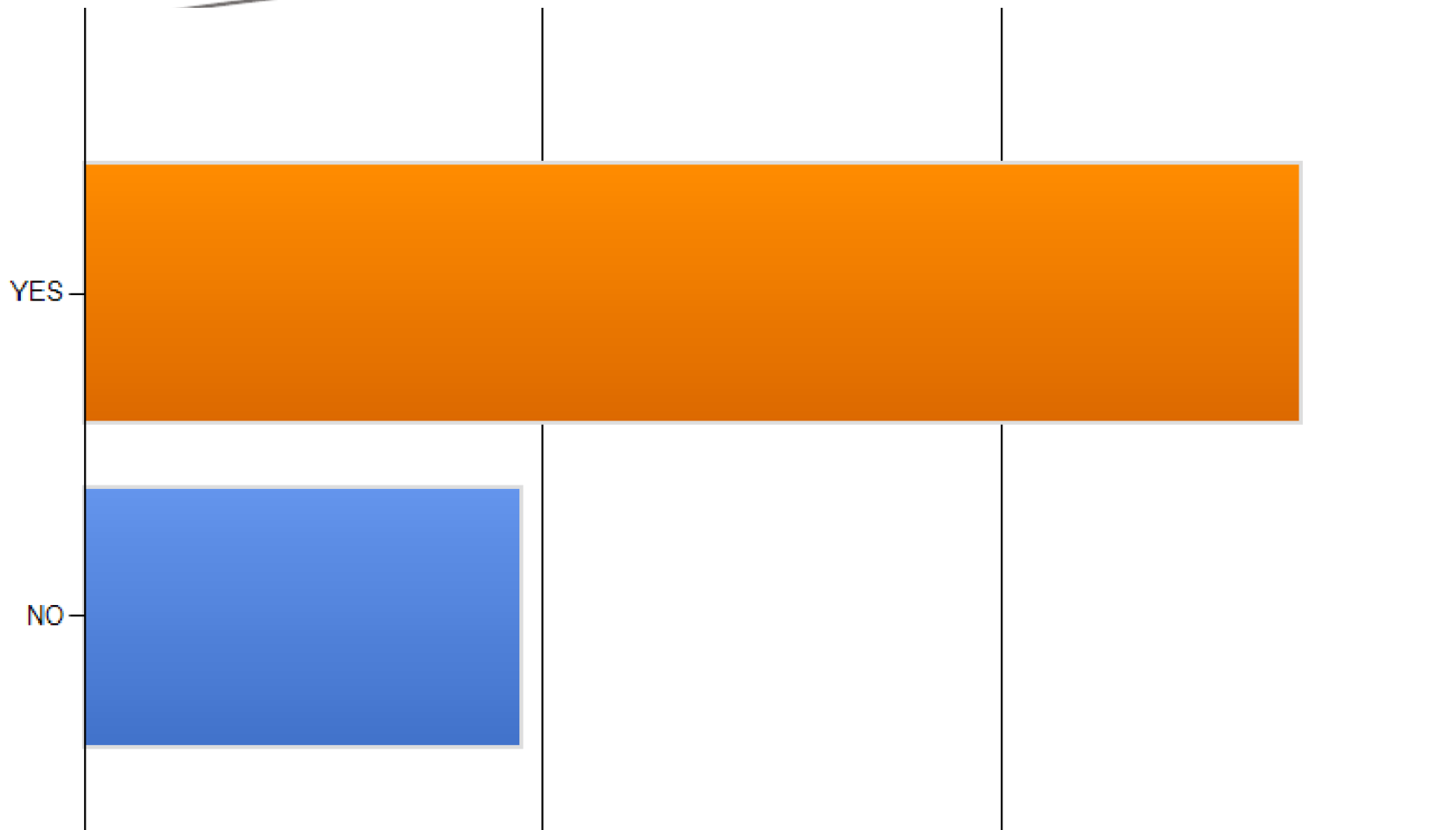
source: ENISA

ENISA SME SURVEY - SERVICES



source: ENISA

ENISA SME SURVEY – MULTIPLE PROVIDERS



source: ENISA

THE ISSUES

- **Can they (PMEs) cope with the risks ?**
 - Specialized support services ?
 - Dedicated risk management approaches ?
- **Are cloud providers conscience of them as a target ?**
 - Specific and adapted services ?
 - Comparable offers/services ?
 - Cost efficient offers ? Mutualisation efforts ?
- **Are frameworks adapted ?**
 - Laws ? Quid latest news from the States ?
 - Standards ?

Who has the answers ? What are the solutions ?

STANDARDS

- **Vital to achieve success/acceptance**
- **Many initiatives exist:**
 - *Architecture standards :*
 - Federated identity
 - Inter cloud exchange protocols
 - Resource/performance
 - Monitoring, audit, billing
 - Policy governance
 - SLAs
 - *Application standards :*
 - API, interfaces
 - Development, deployment
 - Orchestration (middleware)



COMMUNITY



- **A common effort is needed to:**
 - Adapt **market** offers to the **needs**
 - Raise **awareness** about the risks and benefits
 - Implement **good practices** at all levels:
 - Technical
 - Organizational
 - Legal/contractual
 - Get away from the **BUZZ** and **FUD** approach
 - Build on **competences** and **expertise**
 - Create and foster **TRUST**

REFERENCES

- ENISA (European Network and Information Security Agency):
 - [An SME perspective on Cloud Computing \[survey\]](#)
 - [Cloud Computing Risk Assessment](#)
 - [Cloud Information Assurance Framework-report](#)
 - [2011 Governmental Cloud Report](#)
 - [Cloud computing video](#)
 - [Report on the resilience of the Internet interconnection 'ecosystem'](#)
- WEF (World Economic Forum):
 - ["Advancing Cloud Computing. What to do Now? Priorities for Industry and Government"](#)
- [The Seven Standards of Cloud Computing Service Delivery](#)
- [Cloud Standards Wiki](#)
- [CSA \(Cloud Security Alliance\)](#)

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