

Use Cases for Docker in Enterprise Linux Environment

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Containerize!

Use Cases for Docker in the Enterprise Linux Environment

- **What's Docker?**
 - Based on Lightweight Virtualized Technologies
 - Linux Containers: cgroups, namespaces, SELinux
 - Provides a new Format to deliver bits
 - Provide Minimal Footprint
 - Fast Deployment
 - Can be Used on Various Market Segment

Use Cases for Docker in the Enterprise Linux Environment

- **What's Lightweight virtualization?**
 - Lightweight Virtualized vs. Fully Virtualized



Apartment

vs.



Townhouses

Use Cases for Docker in the Enterprise Linux Environment

- **What's Lightweight Virtualization?**
 - Lightweight Virtualized vs. Fully Virtualized



Containers

VS.



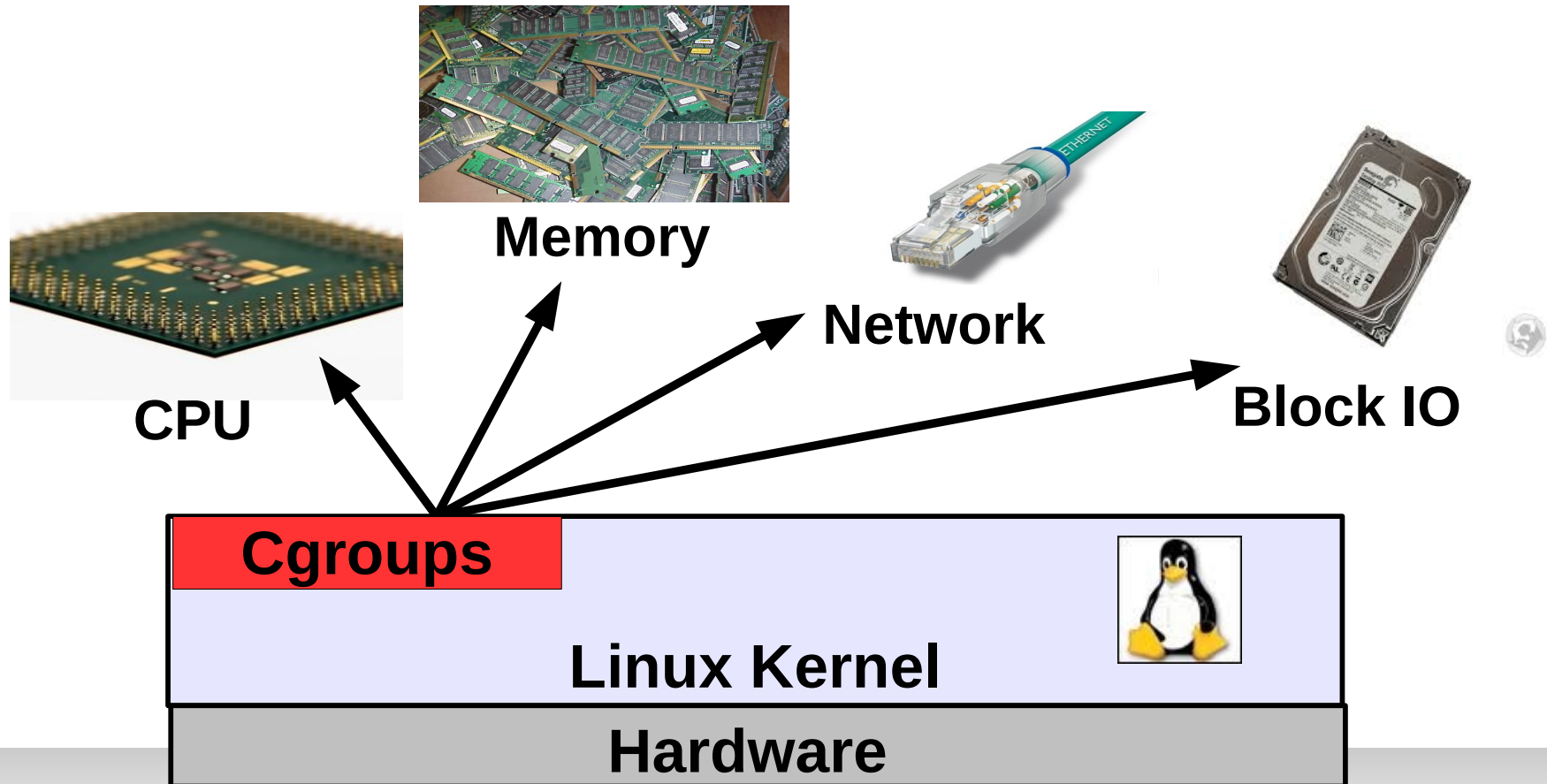
KVM or Xen

Use Cases for Docker in the Enterprise Linux Environment

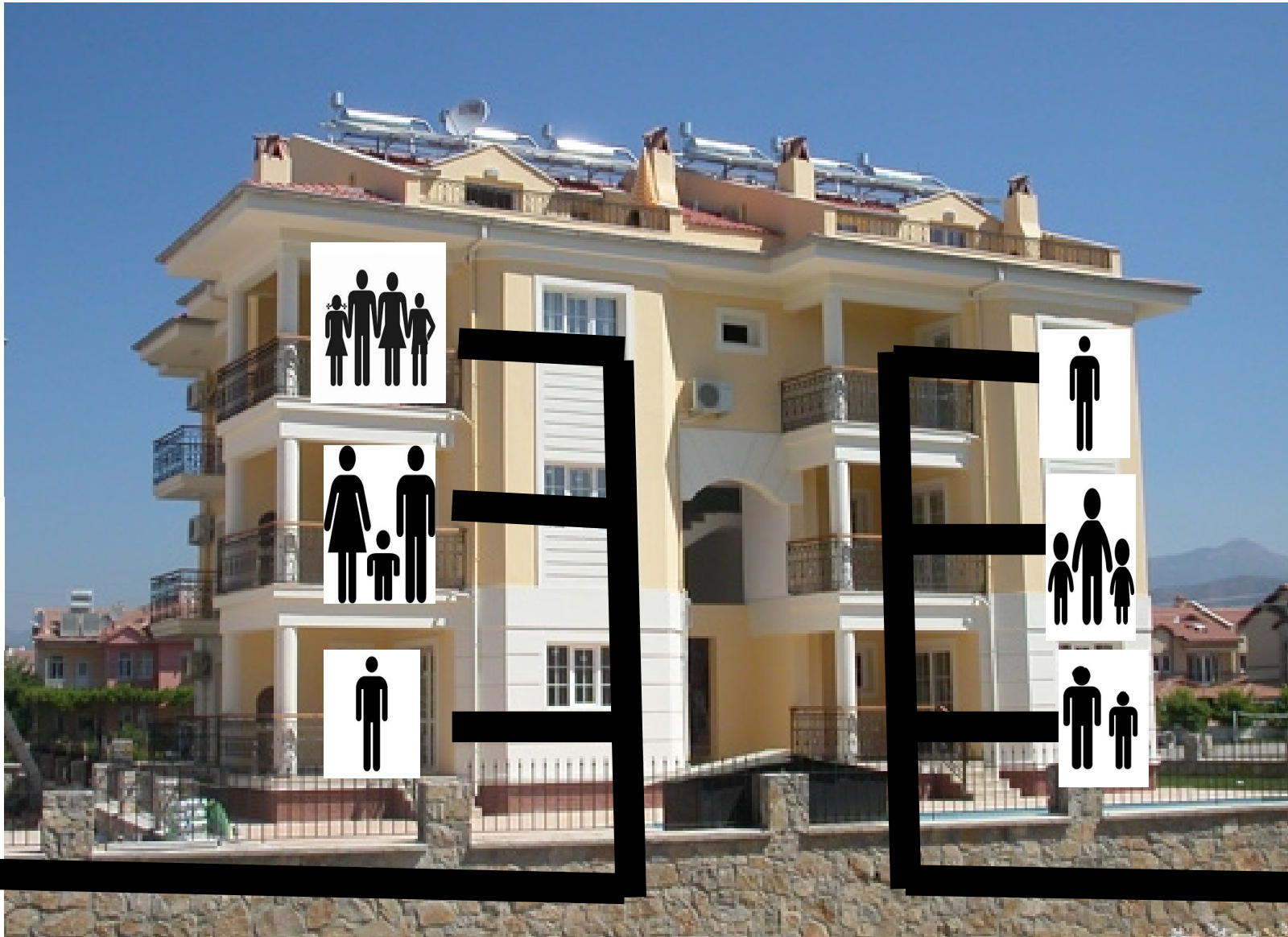
- **What's a Linux Container?**
 - A Lightweight Virtualized Technologies
 - Control Groups – Resource Management
 - Namespace – Process Isolation
 - SELinux, grsecurity – Security
 - SystemD/Kubernetete – Management tool

Use Cases for Docker in the Enterprise Linux Environment

- What's a Linux Container?
 - Control Groups – Resource Management



Control Groups – Resource Management

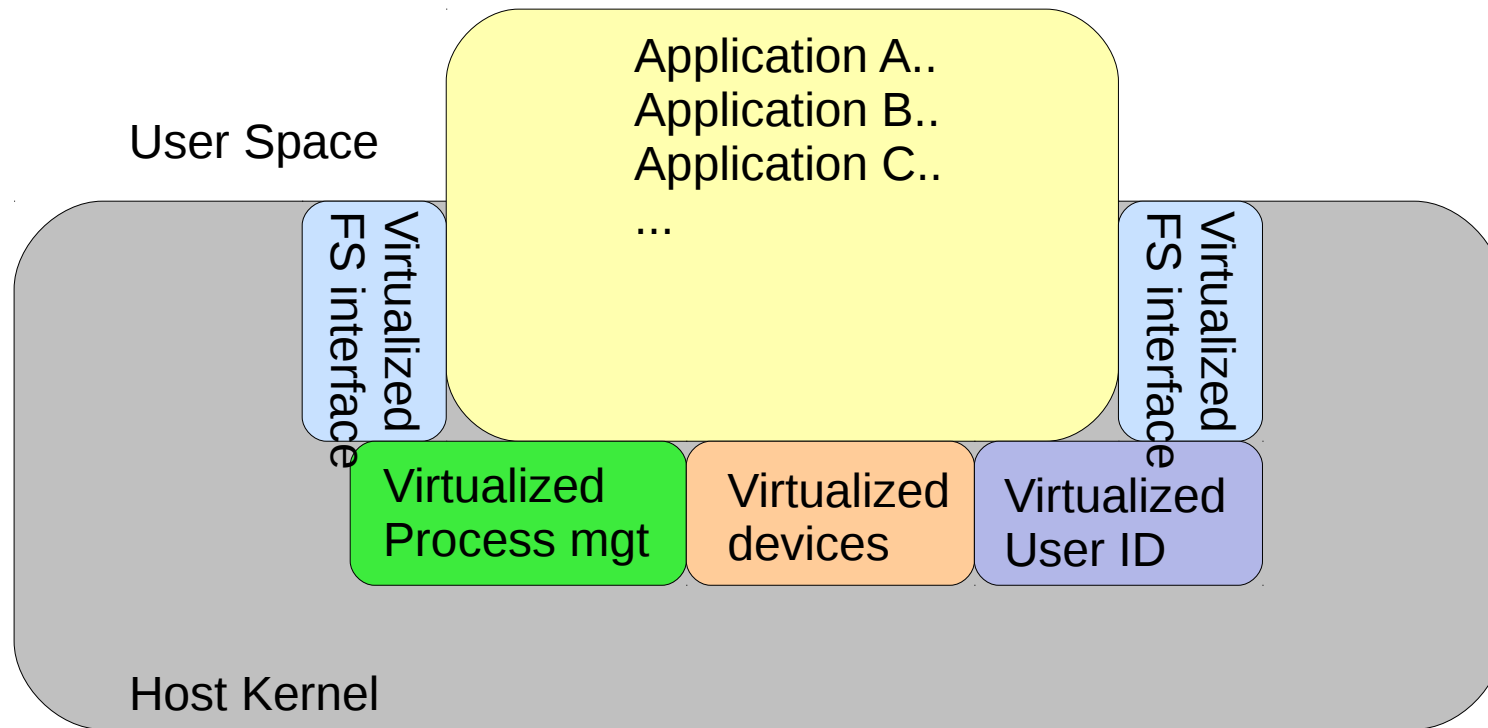


Namespace - Process Isolation



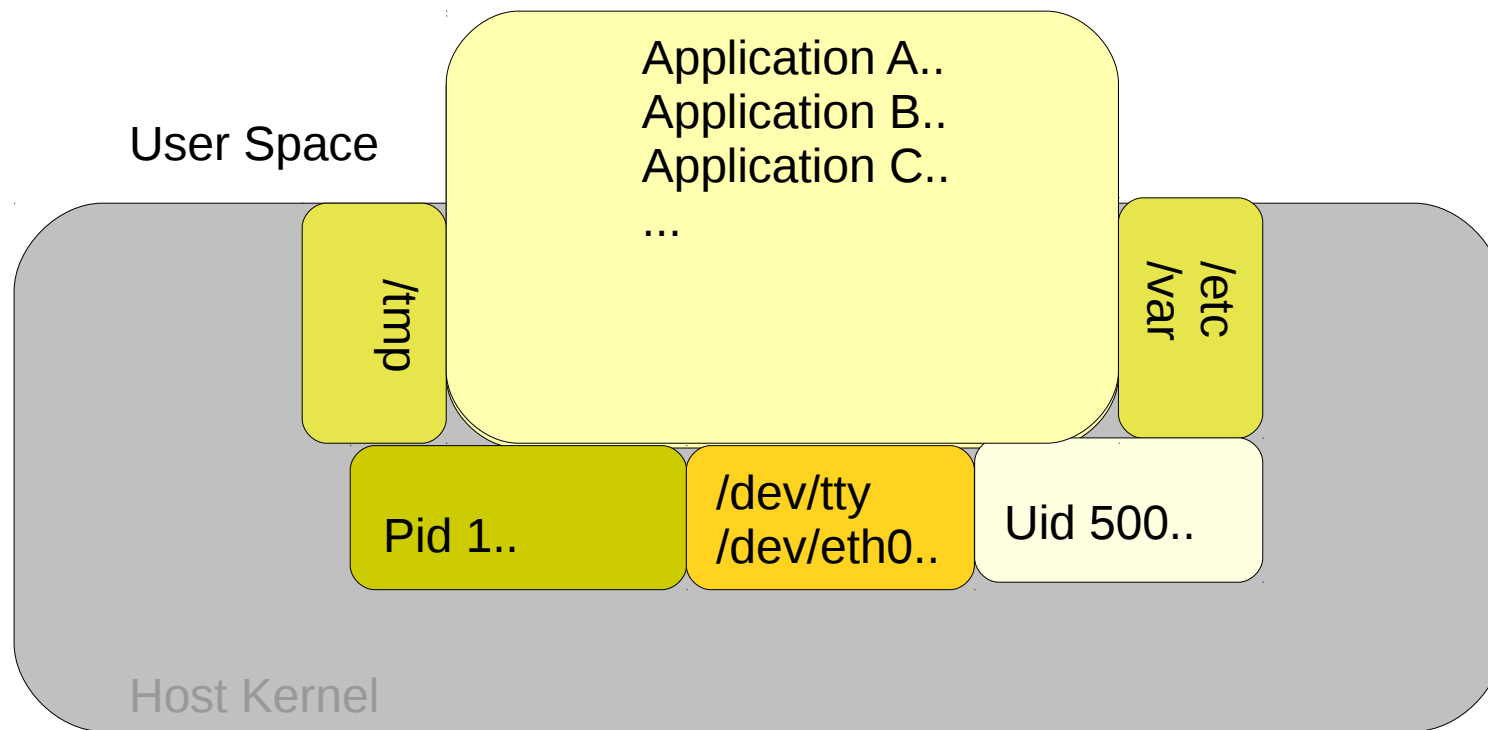
Use Cases for Docker in the Enterprise Linux Environment

- **What's a Linux Container?**
 - Namespaces



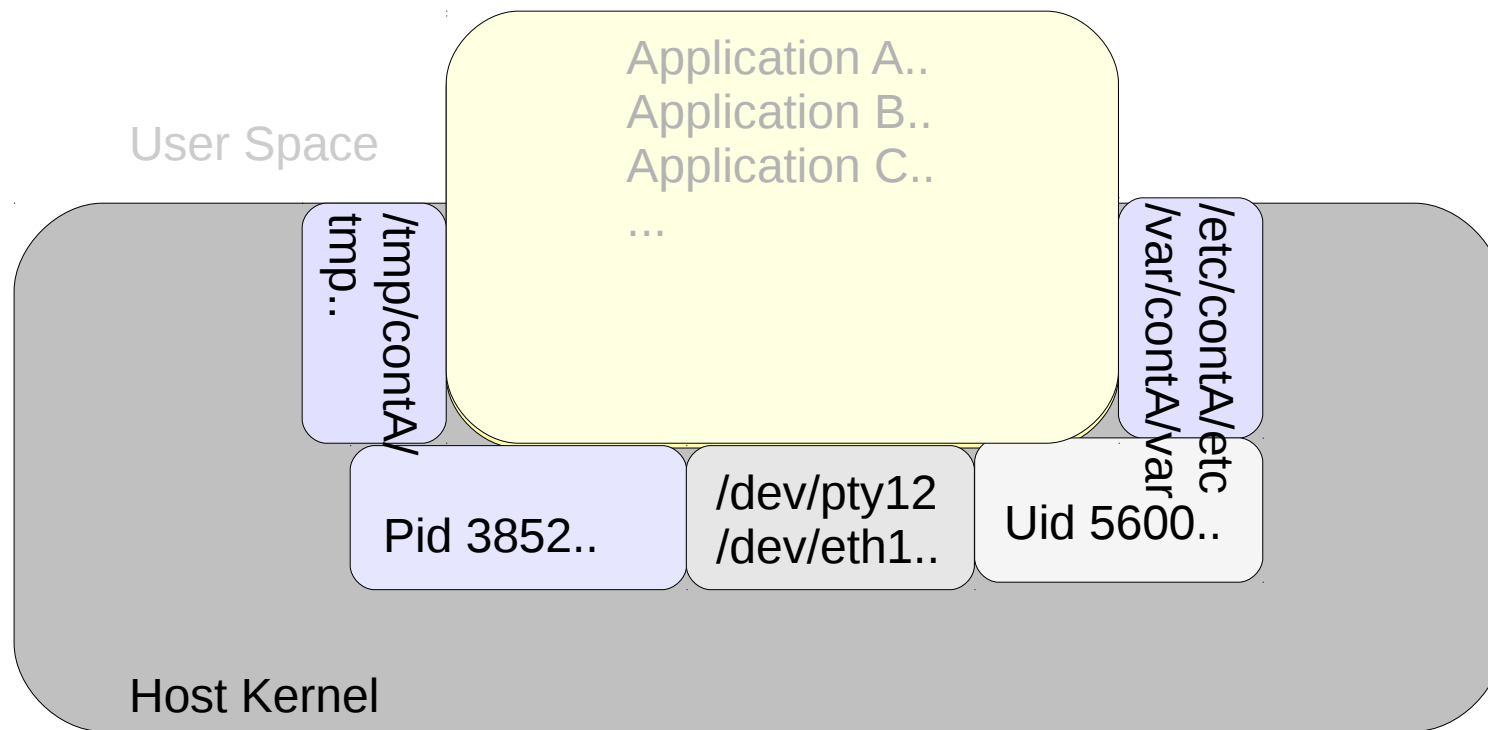
Use Cases for Docker in the Enterprise Linux Environment

- What's a Linux Container?
 - **Namespaces – application point of view**



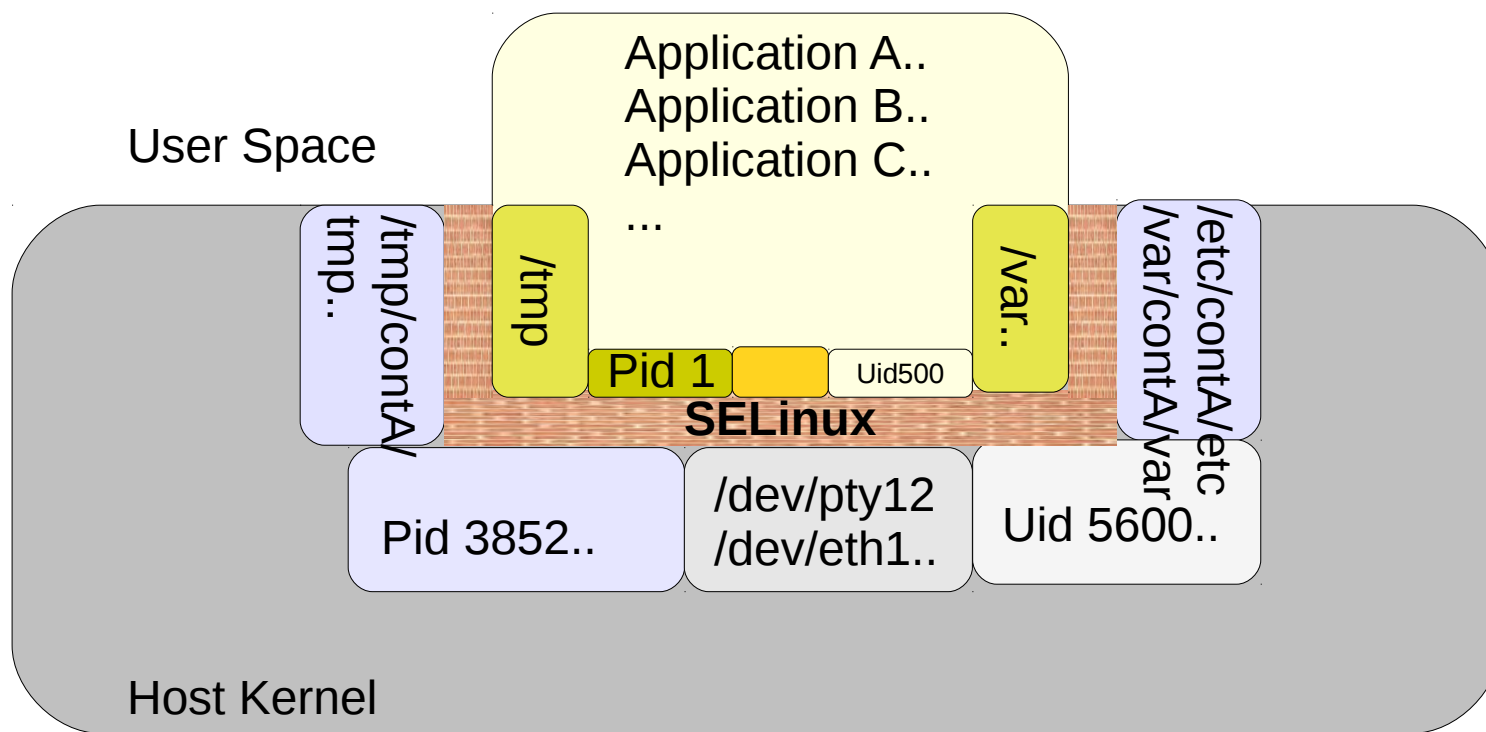
Use Cases for Docker in the Enterprise Linux Environment

- What's a Linux Container?
 - **Namespaces – host point of view**



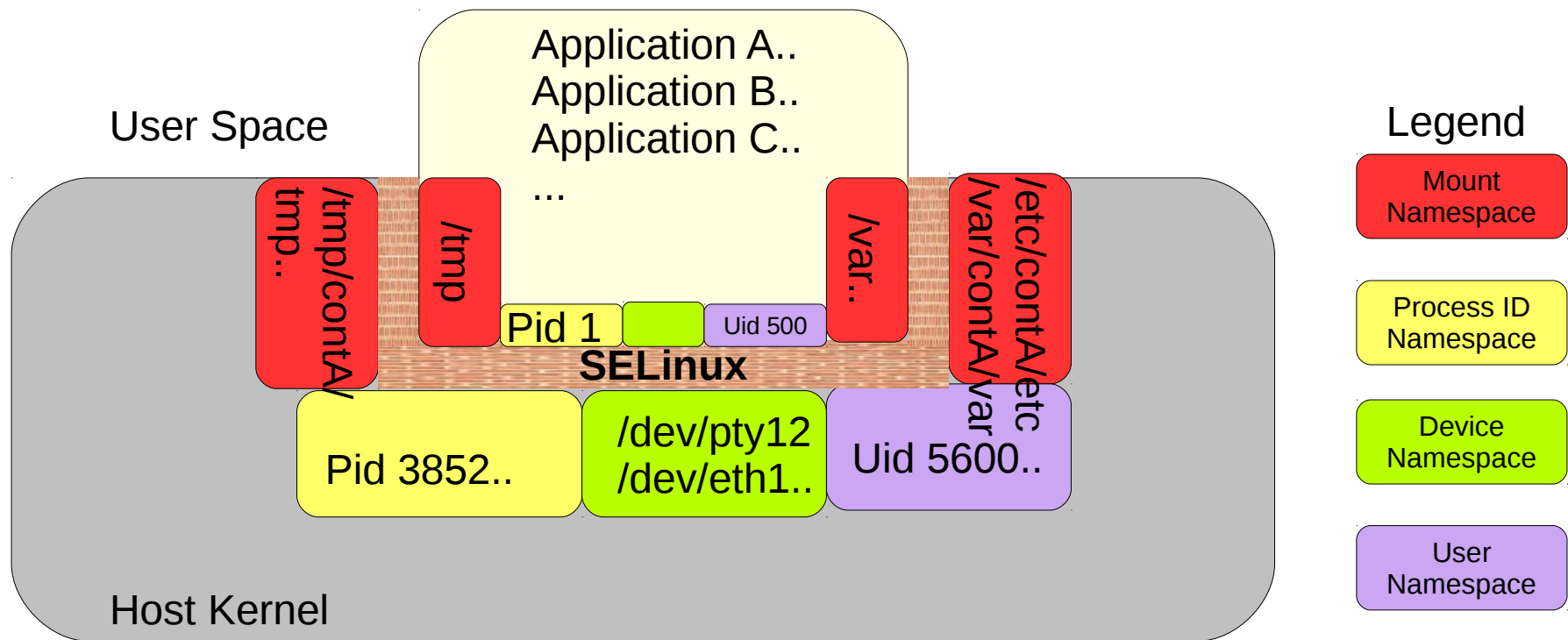
Use Cases for Docker in the Enterprise Linux Environment

- What's a Linux Container
 - **Namespaces and SELinux**



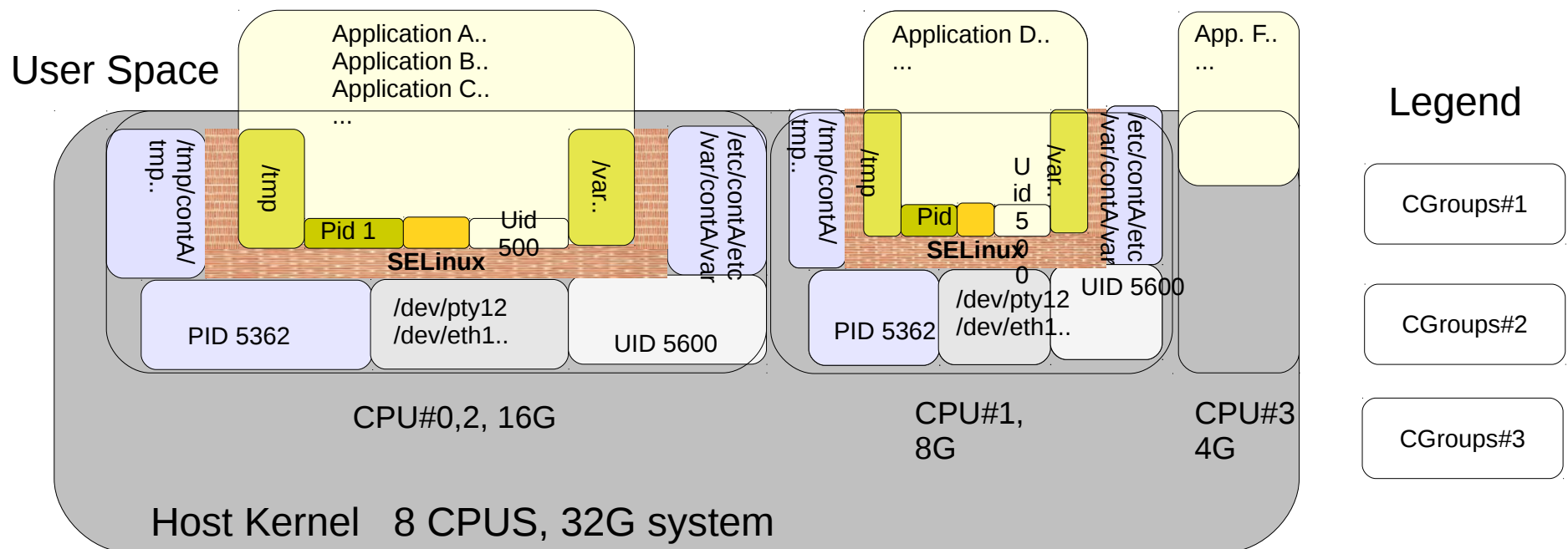
Use Cases for Docker in the Enterprise Linux Environment

- What's a Linux Container?
 - **Namespaces, SELinux**



Use Cases for Docker in the Enterprise Linux Environment

- What's a Linux Container?
 - **Linux Containers: Cgroups, Namespaces, SELinux**

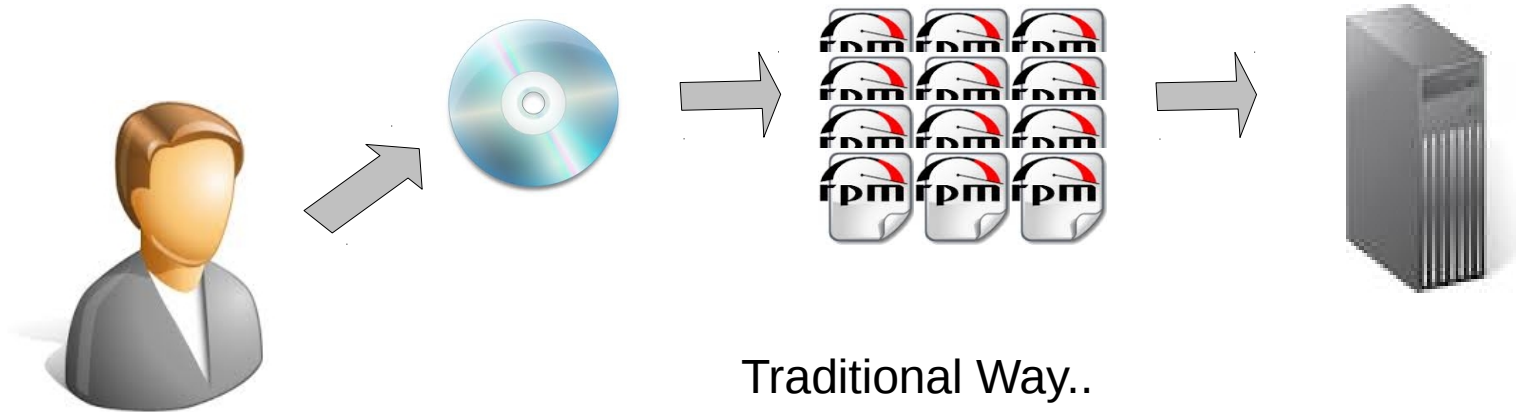


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 - Provide Minimal Footprint
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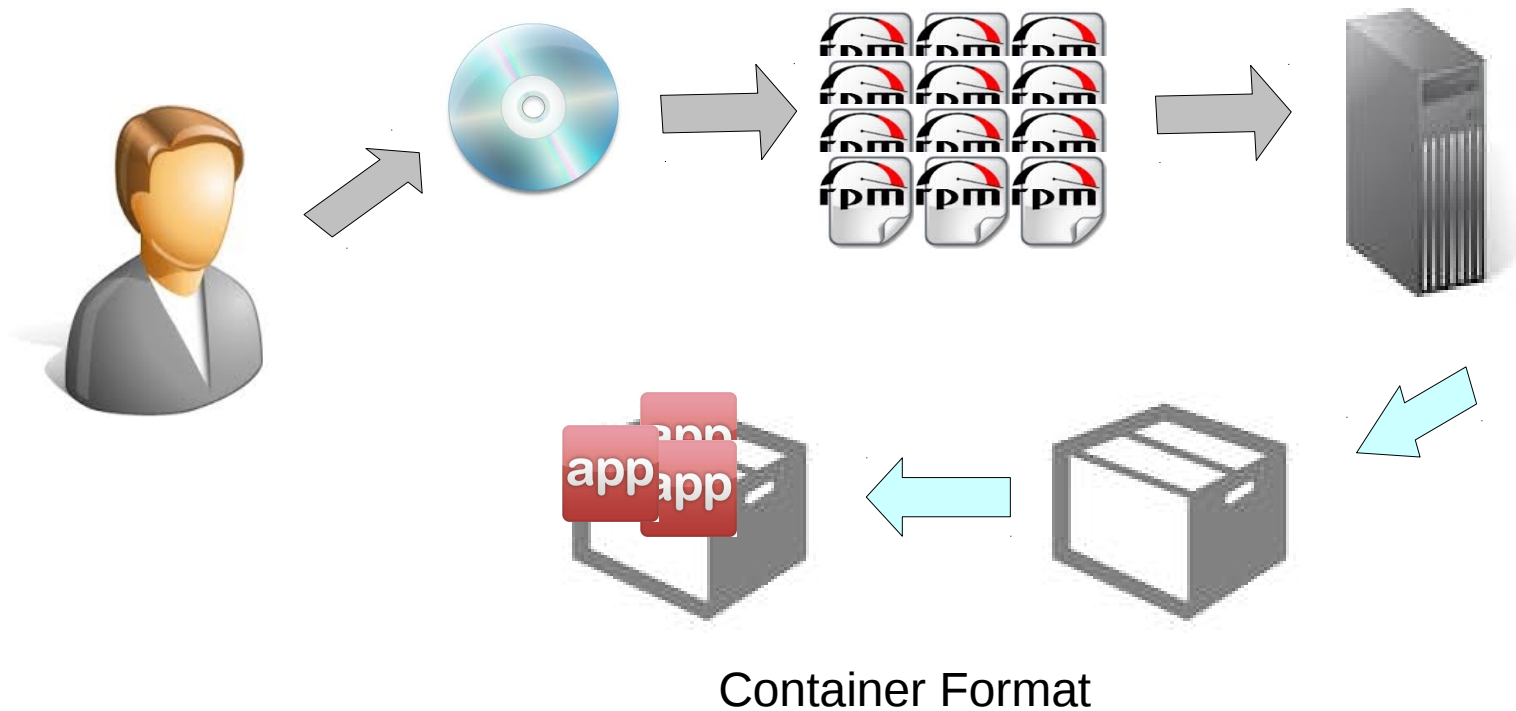
Use Cases for Docker in the Enterprise Linux Environment

- What's Docker?
 - **Provides a new Format to deliver bits**



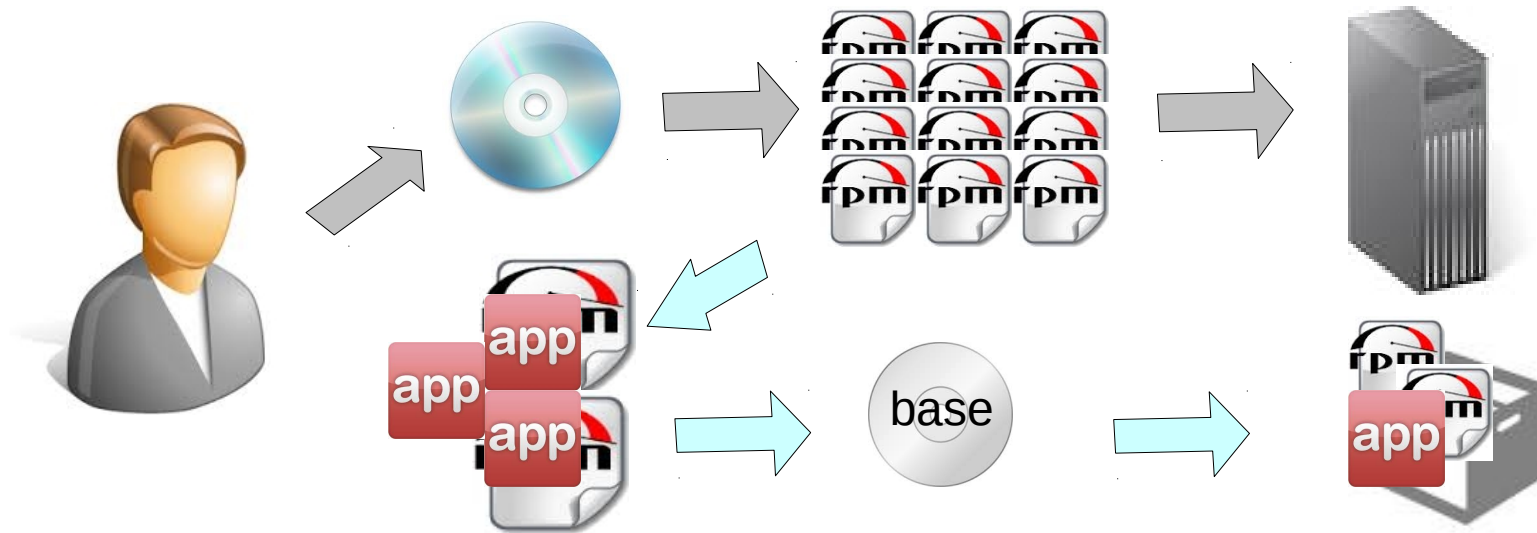
Use Cases for Docker in the Enterprise Linux Environment

- What's Docker?
 - **Provides a new Format to deliver bits**



Use Cases for Docker in the Enterprise Linux Environment

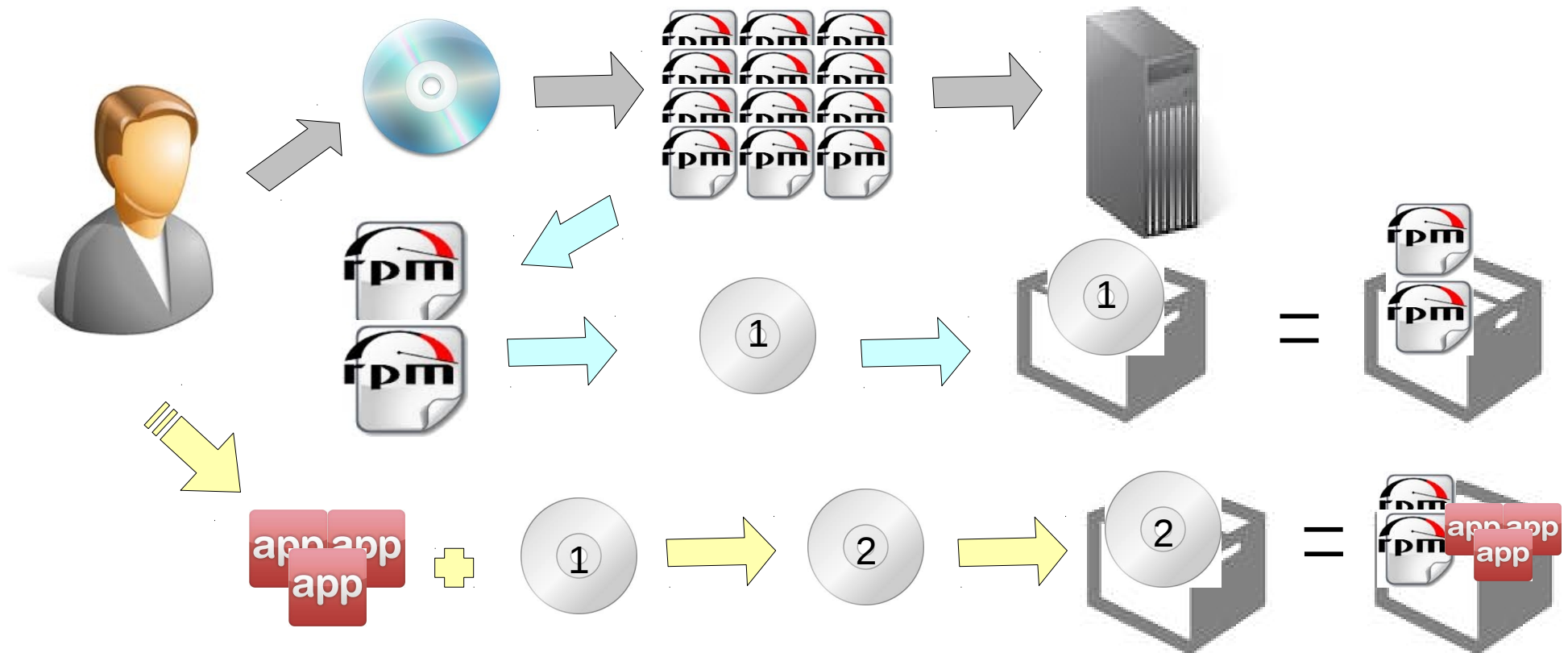
- What's Docker?
 - **Provides a new Format to deliver bits**



Docker Image Format

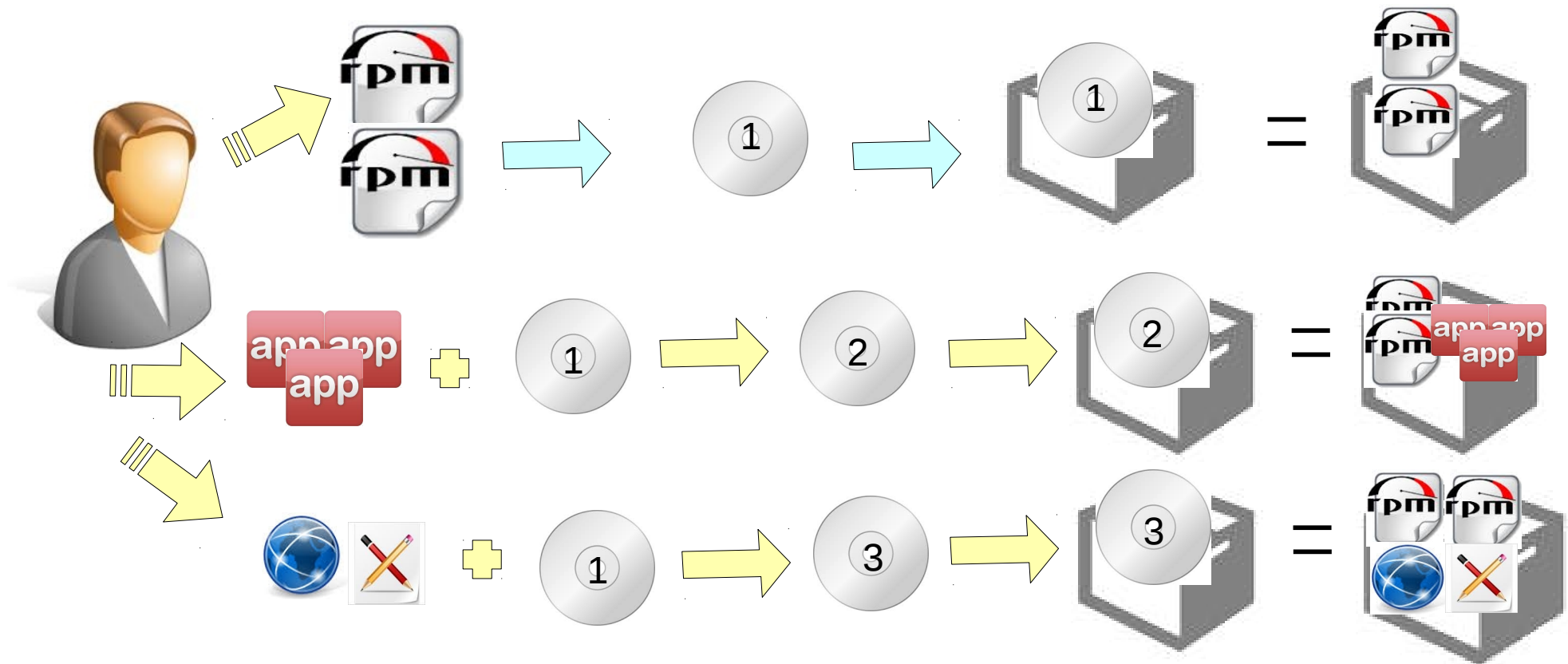
Use Cases for Docker in the Enterprise Linux Environment

- What's Docker?
 - Provides a new Format to deliver bits



Use Cases for Docker in the Enterprise Linux Environment

- What's Docker?
 - Provides image base format to deliver bits

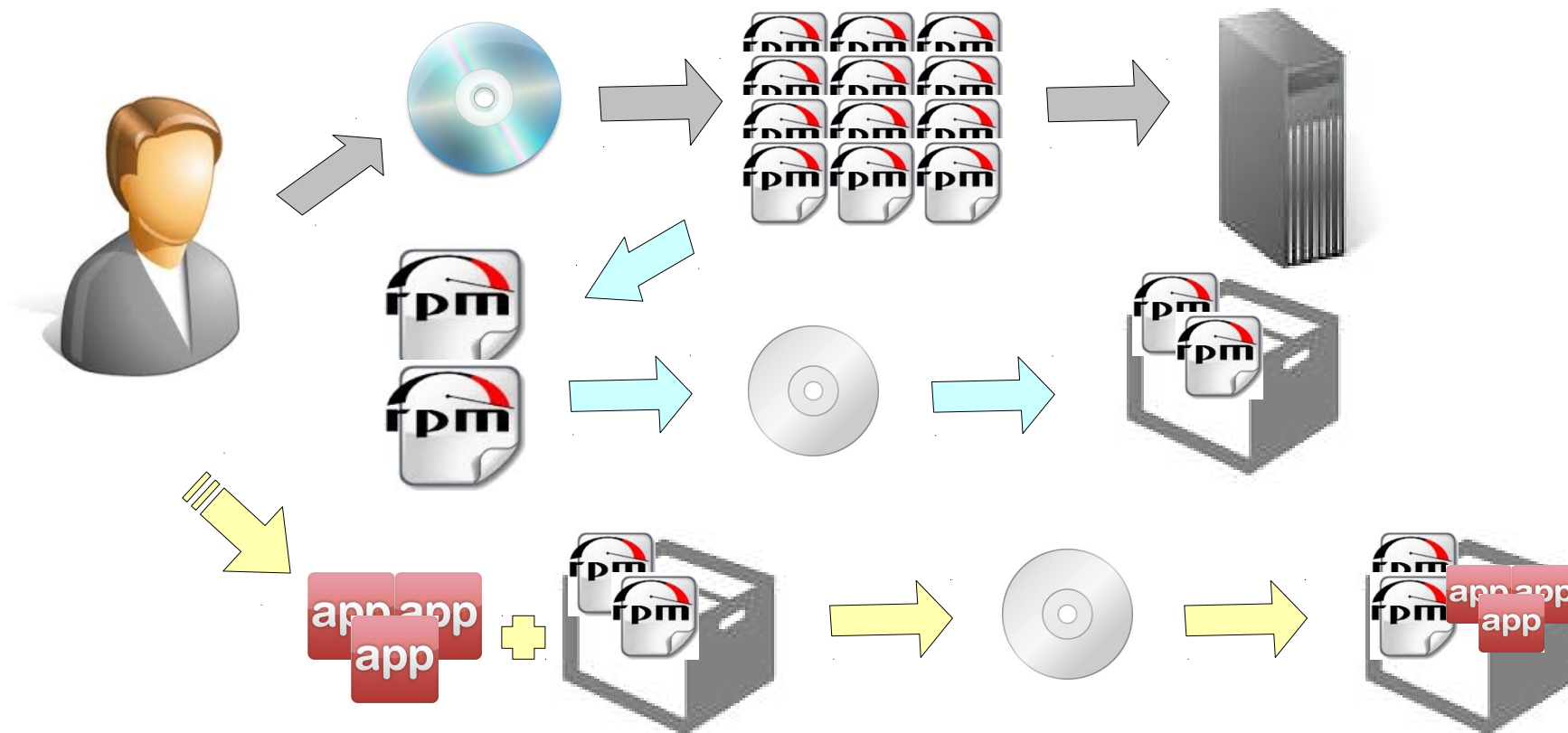


Use Cases for Docker in the Enterprise Linux Environment

- What's Docker?
 - Based on Lightweight Virtualized Technologies
 - Linux Containers: cgroups, namespaces, SELinux
 - Provides a new Format to deliver bits
 - **Provide Minimal Footprint**
 - Fast Deployment
 - Can be Used on Variety of Market Segment

Use Cases for Docker in the Enterprise Linux Environment

- What's Docker?
 - **Provides a new Format to deliver bits**



Use Cases for Docker in the Enterprise Linux Environment

- What's Docker?
 - Based on Lightweight Virtualized Technologies
 - Provide Minimal Footprint
 - **Fast Deployment**
 - Simplified application delivery
 - Light weight Application Isolation
 - Integrated application delivery using Image-based solution
 - Provides application mobility
 - Provides minimal footprint as needed

Use Cases for Docker in the Enterprise Linux Environment

- What's Docker?
 - Based on Lightweight Virtualized Technologies
 - Linux Containers: cgroups, namespaces, SELinux
 - Provides a new Format to deliver bits
 - Provide Small Footprint
 - Fast Deployment
 - **Can be Used on Various Market Segment**

Use Cases – Applications




Use Cases in Enterprise Linux Environment


- Docker acts as the interfaces to Linux containers
- Becomes a new application delivery platform
- Deploy new 'applications' based on flexibility that Docker container provides
- Also can be used by traditional enterprise users

Use Cases in Enterprise Linux Environment

- Traditional Use Cases

- Use it to management system resources

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- Provide application isolation (prevent runaway apps, etc..)
 - For long running applications that have static setup and user environment

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- Benefit from less impact on upgrade management and less overhead

- Running multiple Linux applications on single Linux host

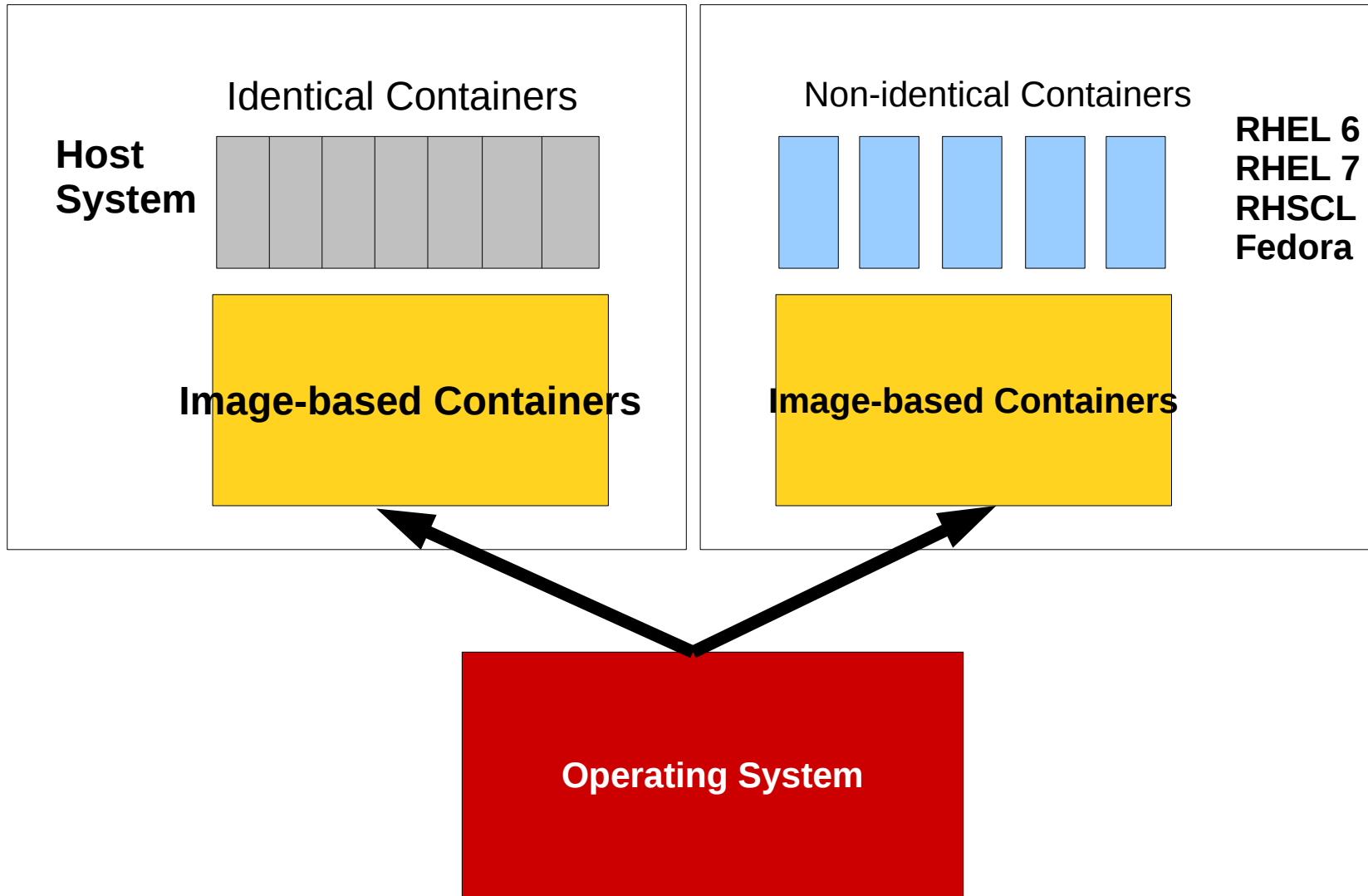
- 
- Instead, run inside docker container

- Applications that run inside of full OS virtualized environment; but in simplified form, can be migrated to Docker environment

Use Cases in Enterprise Linux Environment

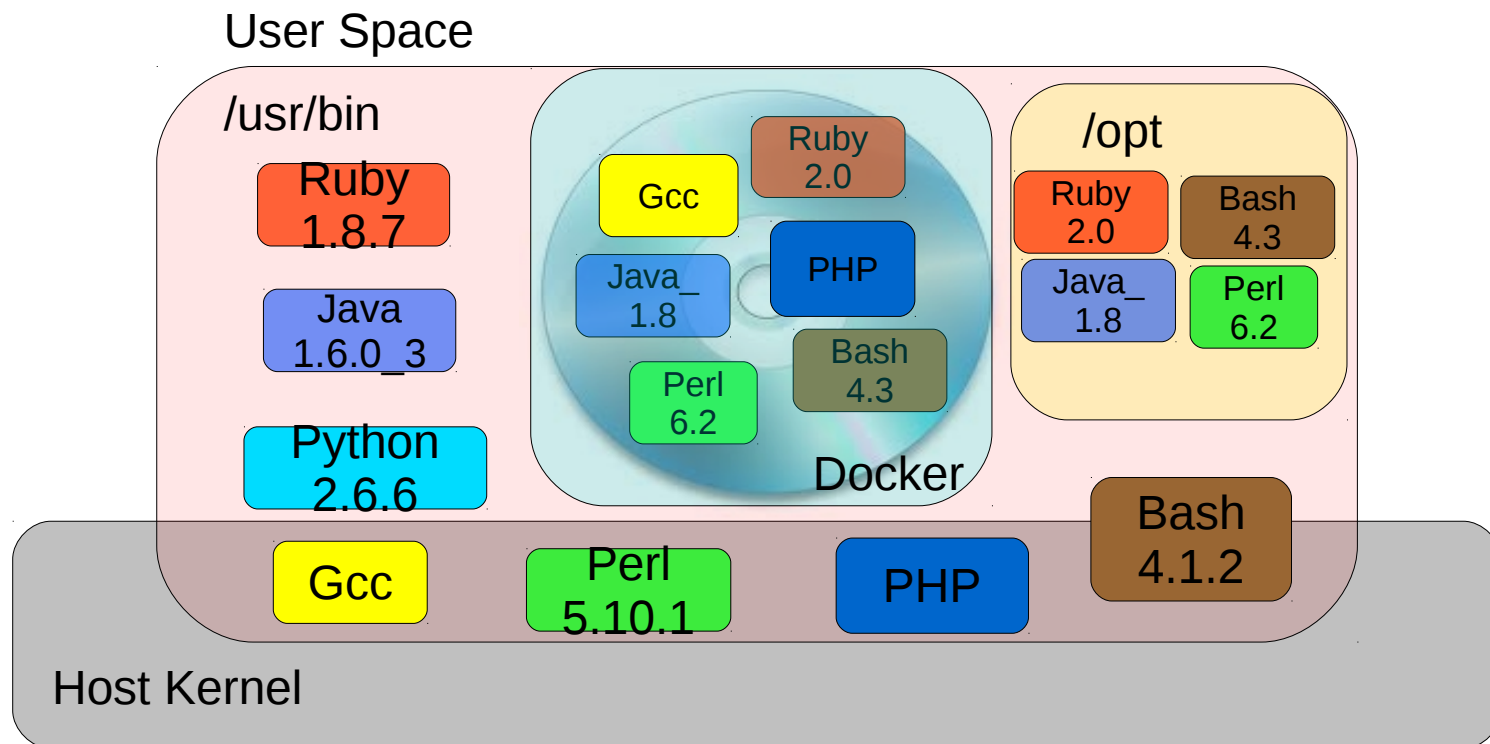
- New Application Delivery Use Cases
 - Focus on fast deployment
 - Focus on use cases that mitigate impacts by server updates
 - Mixed environment use cases
 - Stack-able environment use cases

Use Cases in Enterprise Linux Environment



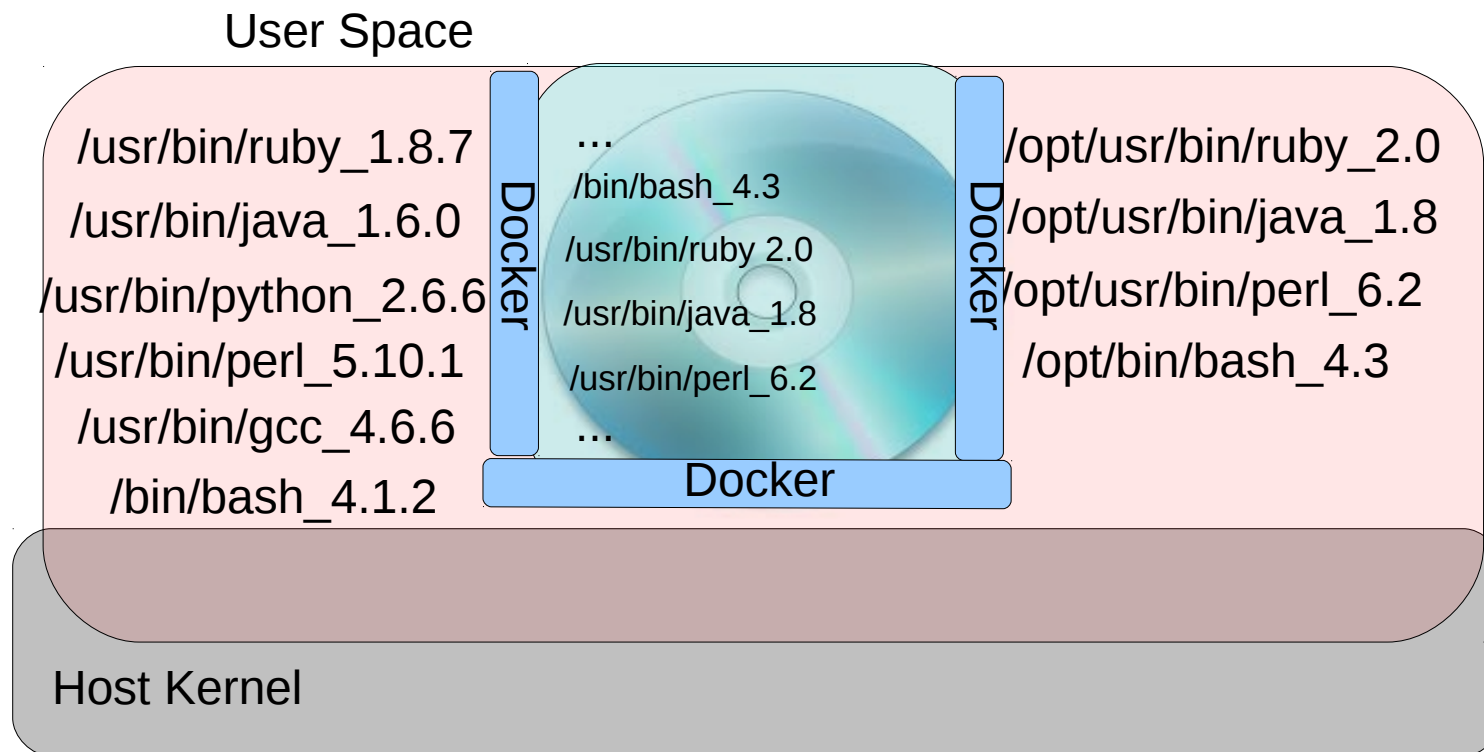
Use Cases in Enterprise Linux Environment

- Mixed Environment Use Cases
 - Mitigate impacts by server updates
 - Running newer applications on older hosts



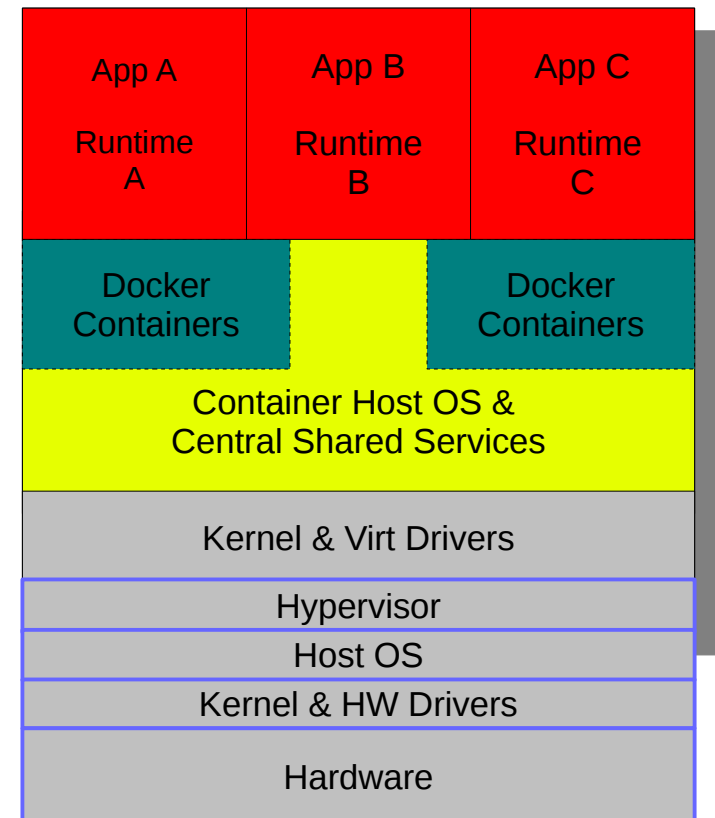
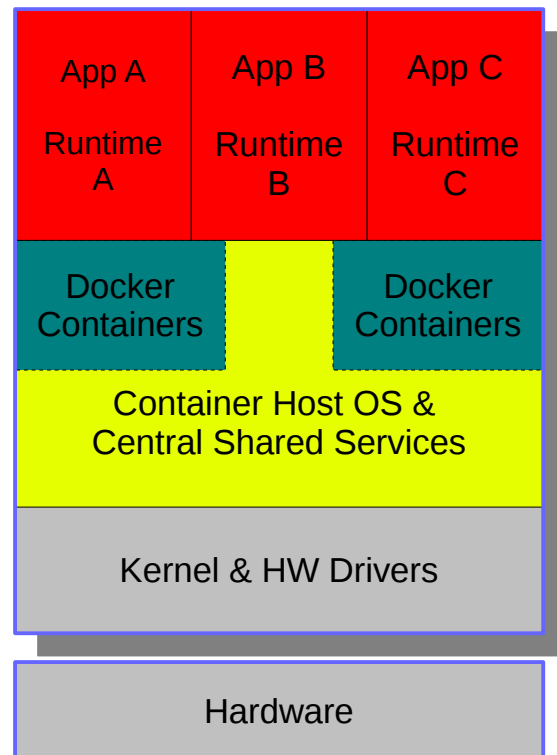
Use Cases in Enterprise Linux Environment

- Mixed Environment Use Cases
 - Mitigate impacts by server updates
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Use Cases in Enterprise Linux Environment

- Stack-able Environment Use Cases
 - Uses existing fully virtualized environment and setup
 - Running newer applications on old virt hosts



Use Cases – Enterprise Usage



Use Cases in Enterprise Linux Environment

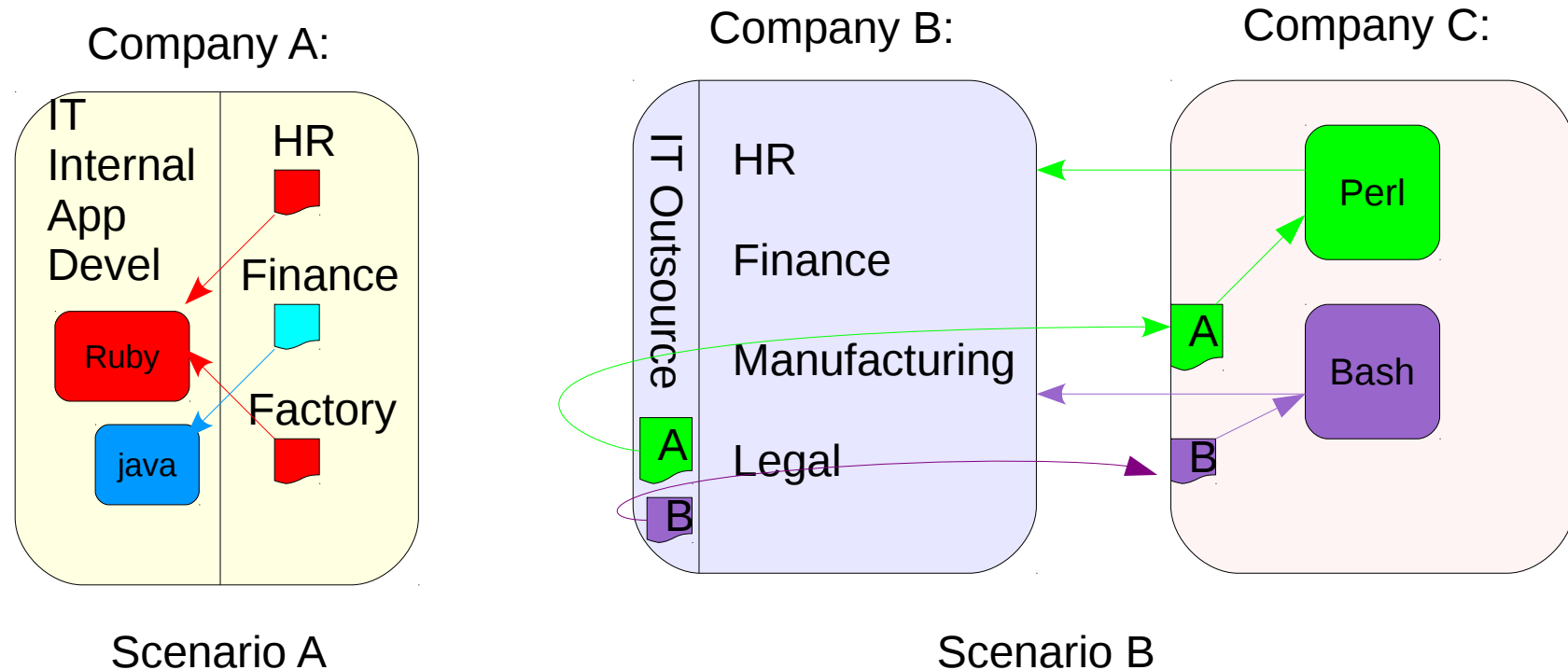
- Enterprise Environment - Full Stack Integration
 - Docker Registry - Image manager and database
 - RHEL Atomic Host – Deploy and management container
 - Kubernetes - Container orchestration and management (Google, Red Hat, IBM...)
 - Openstack - Cloud infrastructure

Use Cases in Enterprise Linux Environment

- Market Segment
 - Early Adopter
 - Existing in-house application migration
 - PaaS Platform
 - Ease of deployment and Integration
 - Main Stream
 - Cloud infrastructure integration
 - For in-house software development
 - For system integrators whom hosts different development environment

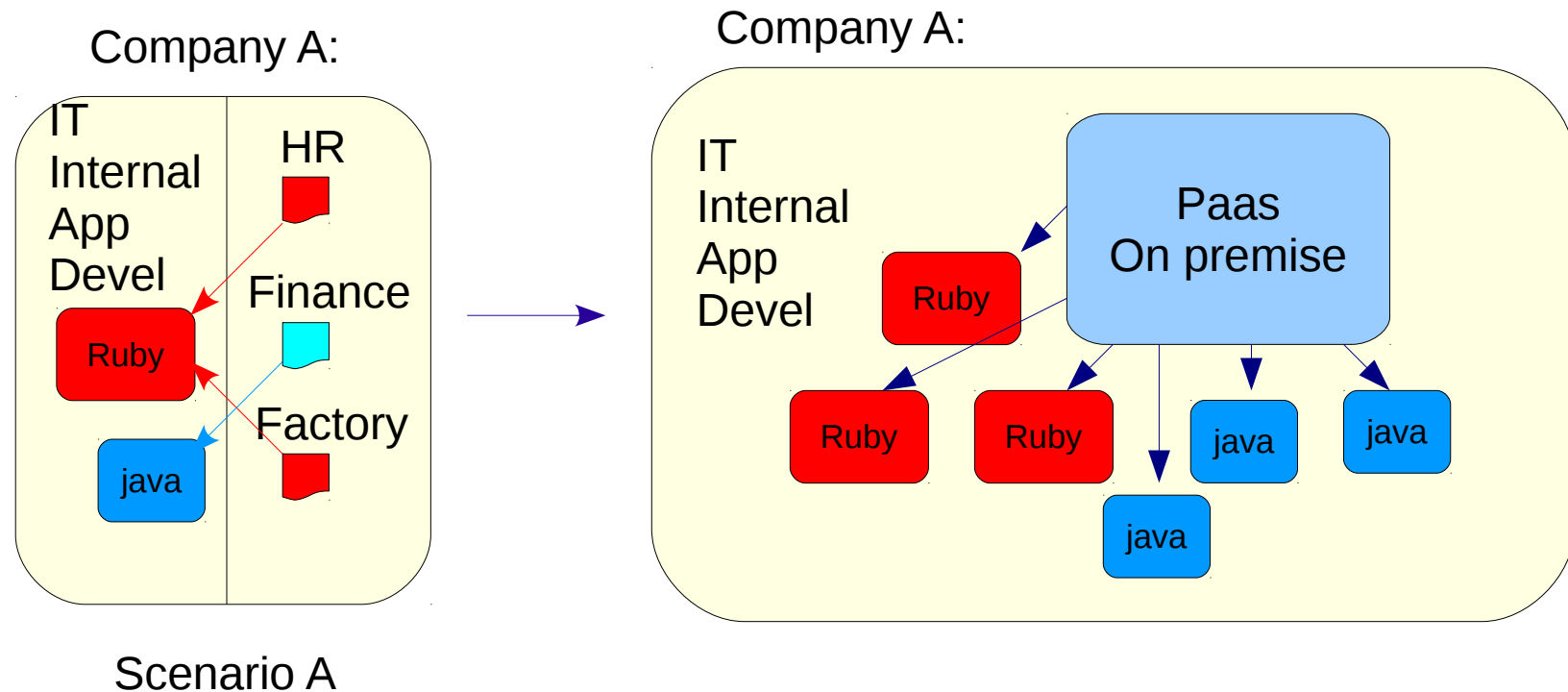
Use Cases in Enterprise Linux Environment

- Early Adopters and Main Stream Use Cases
 - For in-house software development
 - For systems integrator whom hosts different development environment



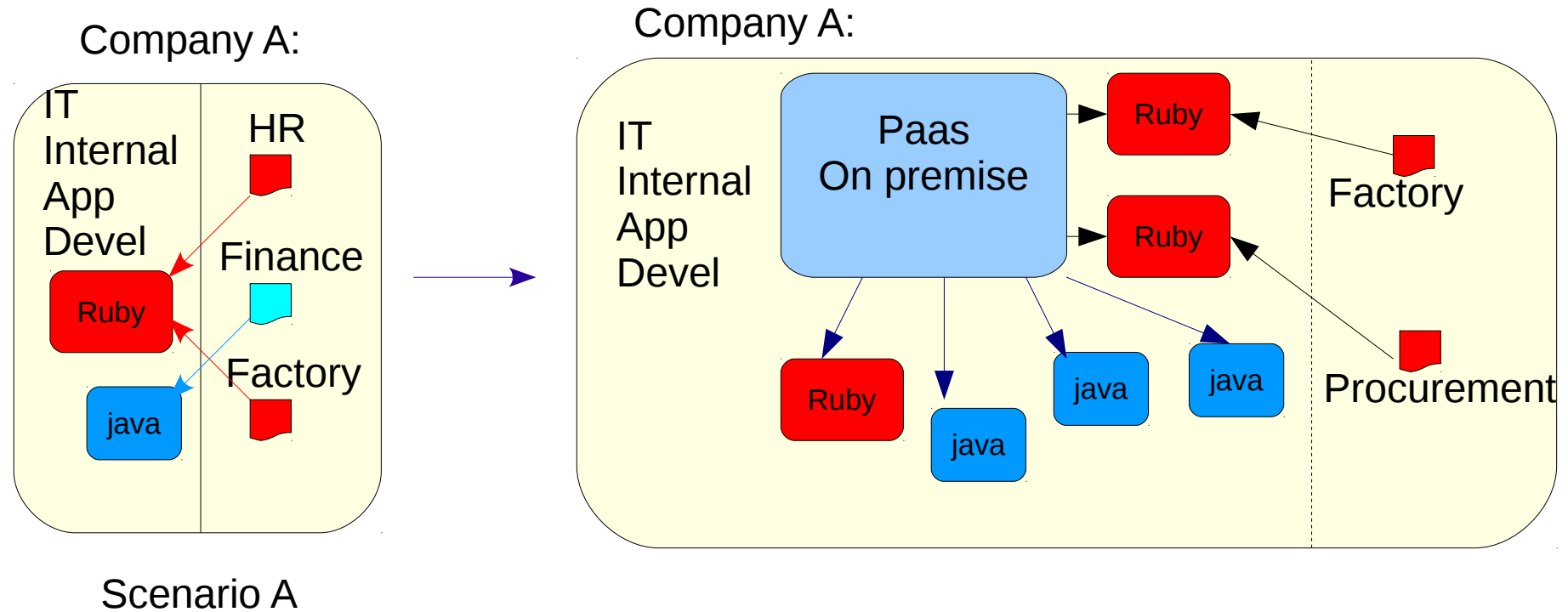
Use Cases in Enterprise Linux Environment

- Early Adopter
 - For in-house software development and/or deployment
 - To satisfy SLA requirements quickly



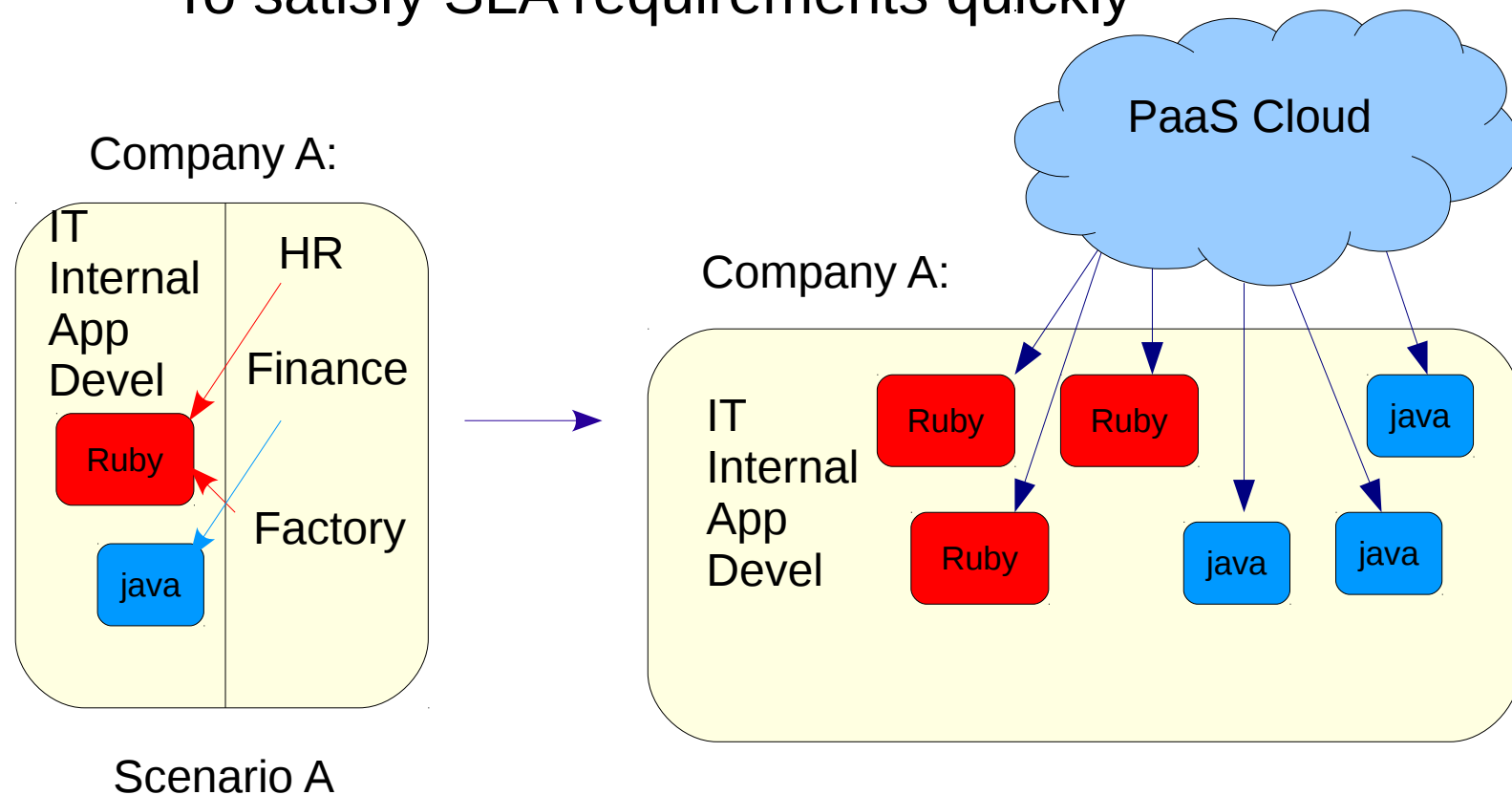
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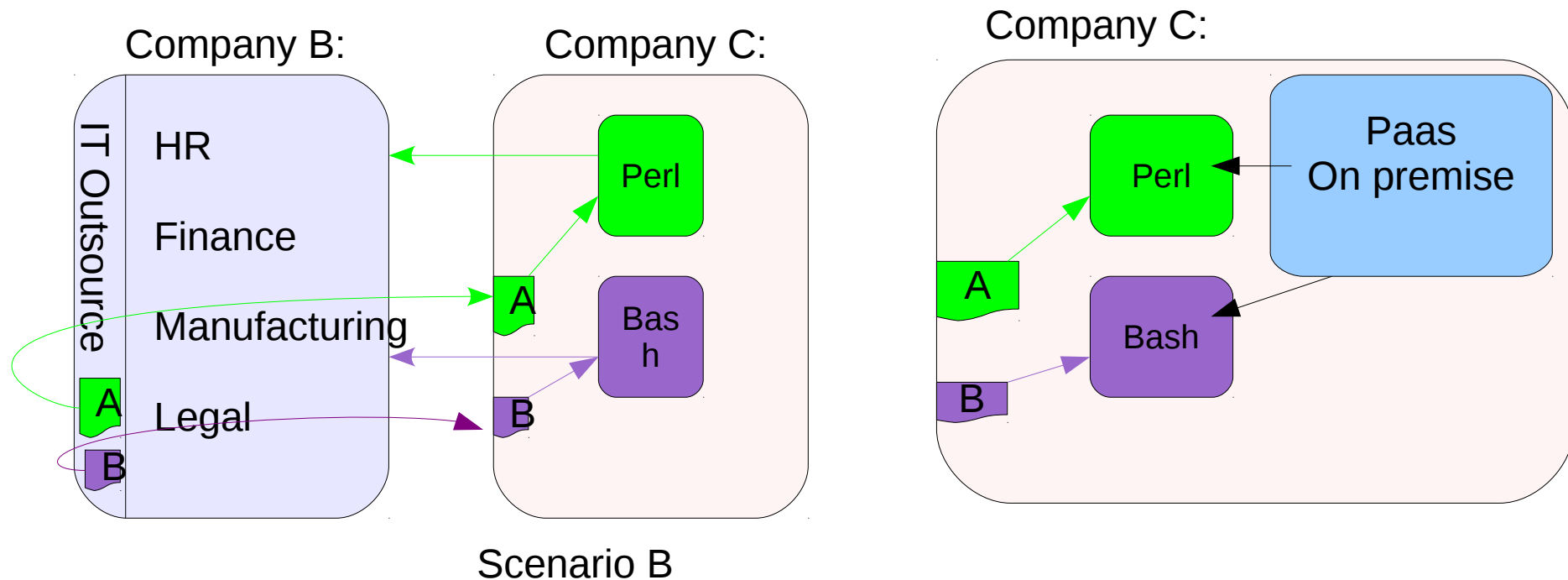
Use Cases in Enterprise Linux Environment

- Main Stream
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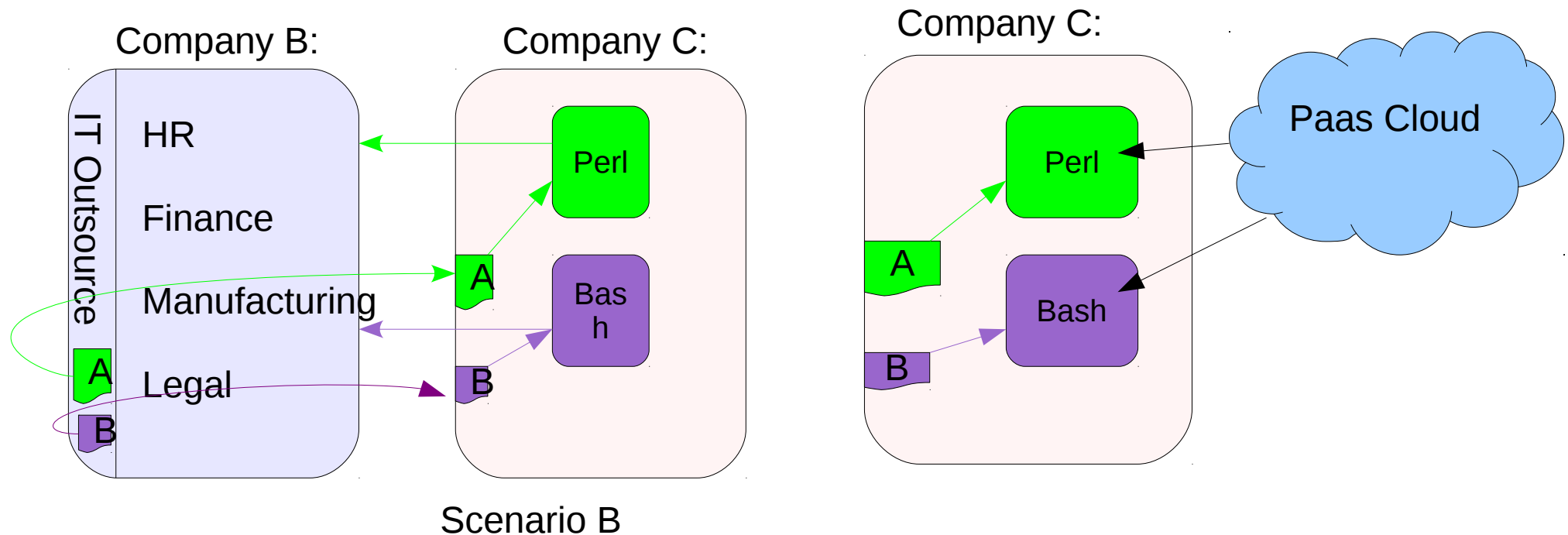
Use Cases in Enterprise Linux Environment

- Early Adopters
 - For external software development, and integration plus deployment
 - For systems integrator whom hosts different application environment



Use Cases in Enterprise Linux Environment

- Main Stream
 - For external software development, and integration plus deployment
 - For systems integrator whom hosts different application environment



Use Cases in Enterprise Linux Environment

Key Takeaways

- Application resource management and isolation mechanism in a light-weight multi-tenancy environment
- Agile application packaging w/ Docker image-based containers
- Provide flexibility on environment footprint
 - **Mixed and/or Stack-able Environment**
- Fast deployment for traditional application's environment
- Compatible with existing full virt environment - run docker inside virtualized environment

Use Cases in Enterprise Linux Environment

References

- Docker – [docker.io](https://www.docker.com/tryit/) or <https://www.docker.com/tryit/>
- Performance Blog on Docker – Jeremy Eder
<https://developerblog.redhat.com/2014/08/19/performance-analysis-docker-red-hat-enterprise-linux-7/>
- RHEL Blog - <http://rhelblog.redhat.com/>
- Project Atomic - <http://www.projectatomic.io/>
- <https://github.com/GoogleCloudPlatform/kubernetes>

Questions?

