Architecture - Managed

Dynatrace Training Module
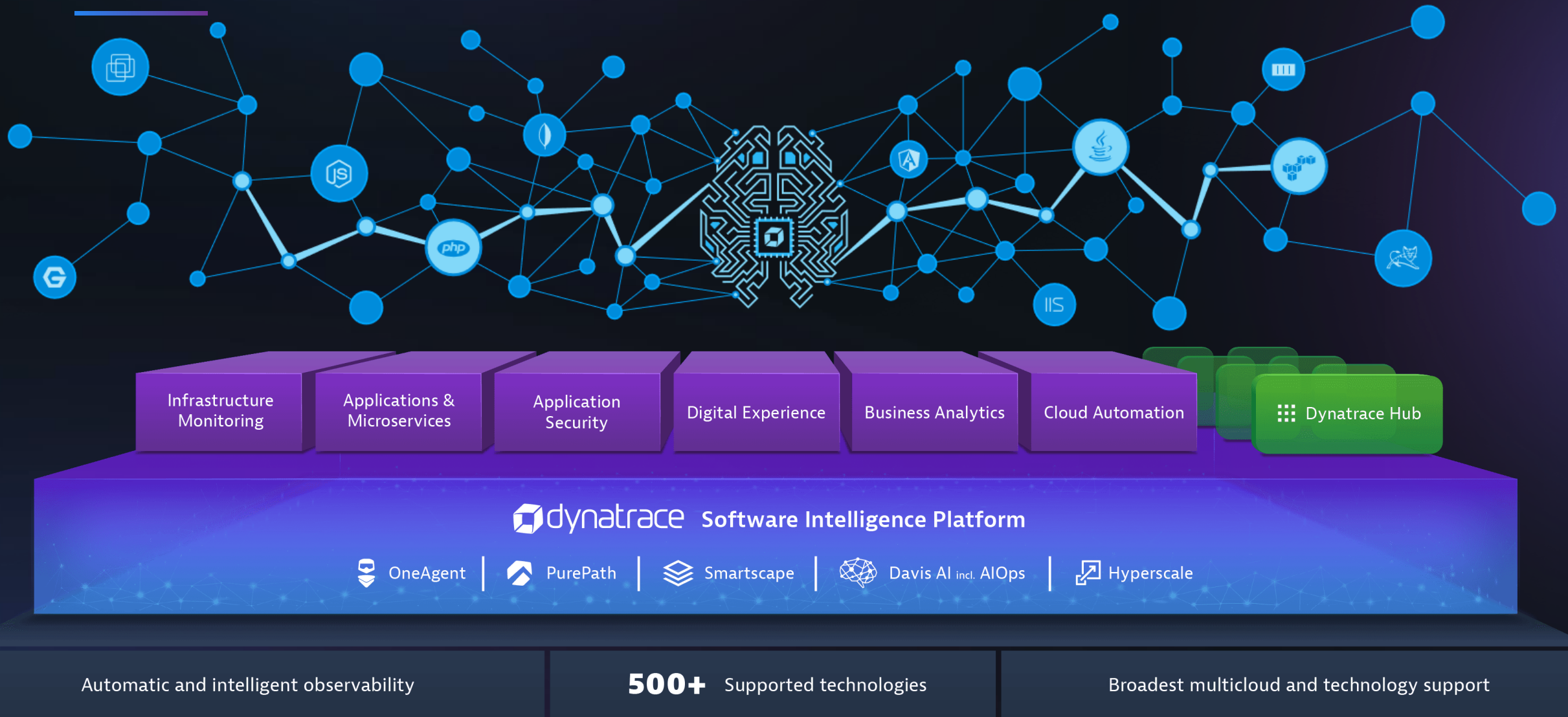
dynatrace

Agenda

- Dynatrace Capabilities Overview

- Managed Architecture

What is Dynatrace?

What is Dynatrace?

Infrastructure Monitoring	Applications & Microservices	Application Security	Digital Experience	Business Analytics	Cloud Automation	Dynatrace Hub

dynatrace **Software Intelligence Platform**

OneAgent | PurePath | Smartscape | Davis AI incl. AIOps | Hyperscale

Automatic and intelligent observability	**500+** Supported technologies	Broadest multicloud and technology support

Deploying software and getting the best of both worlds

SaaS

We provide the service, you just use it.

Benefits
- No local installation
- No worries about hardware provisioning backups and data storage
- No monitoring/operator needed

Concerns
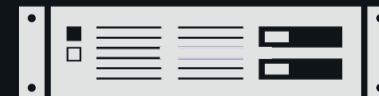- Compliance
- Bandwidth consumption

On Premises

We provide the software, you run it.

Benefits
- Full control of data

Concerns
- System administrators need to support it: troubleshooting, patching, upgrading, backup, monitoring, failover

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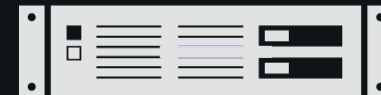- Bandwidth consumption

Managed On Premises

You provide the platform, we manage the service.

- Full control of data
- Self monitoring builtin
- No worries about patching, upgrading, troubleshooting, monitoring or failover

Deploying software and getting the best of both worlds

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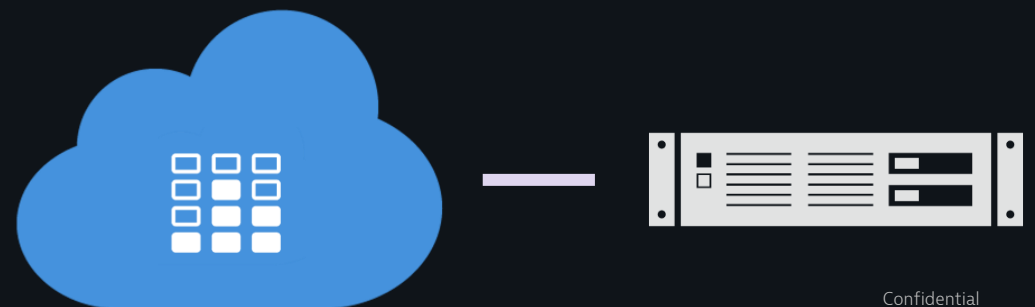- No monitoring/operator needed

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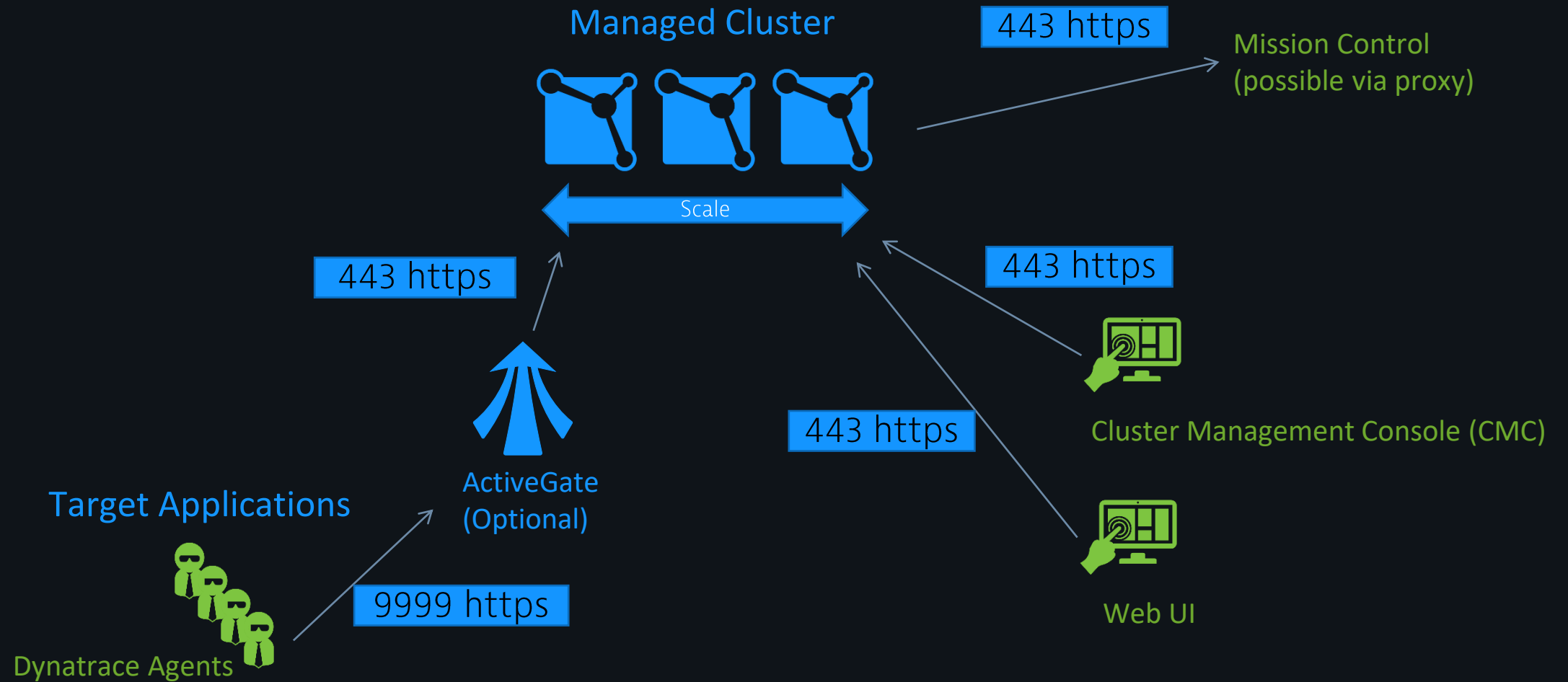- Bandwidth consumption

Managed

You provide the platform, we manage the service.

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Dynatrace Managed

Ports - Managed

Managed Cluster

443 https → Mission Control (possible via proxy)

Scale

443 https

443 https → Cluster Management Console (CMC)

443 https

ActiveGate (Optional)

Target Applications

9999 https

Dynatrace Agents

Web UI

Storage and Retention – Managed

- Code Level and Performance data
  - Service Requests – **35 days** (can be adjusted)
  - Service Code Level – **10 days** (can be adjusted)

- Time Series
  - **1 minute** intervals – **14 days**
  - **5 minute** intervals – **28 days**
  - **1 hour** intervals – **400 days**
  - **1 day** intervals – **5 years**

- RUM
  - Sessions and User Actions – **35 days** (can be adjusted)
  - Session Replay – **35 days**
  - Waterfall analysis– **10 days** (can be adjusted)

- Synthetic
  - Transactions – **35 days** (can be adjusted)

Tooltips provide info on where data is coming from

Updates

- The components are updated on the schedules below:

- Managed Cluster
    - Every 4 weeks (may delay, but can't skip them)
    - Cluster versions are supported for 3 months (4 months with Premium support)

- OneAgent
    - Every 4 weeks (optional)
    - OneAgent versions are supported for 9 months (12 months with Premium support)

- OneAgent updates are shipped together with the Cluster Upgrade

Managed Node Requirements

Node type	Max. hosts monitored (per node)	Max user actions/ min (per node)	Minimum Node Spec	Disk IOPS	Direct Storage (Total across all nodes for 10 days code visibility)	Long-term Metrics Store (per node)	Elasticsearch (per node for 30 days retention)
Micro	50	1k	4 vCPUs, 32GB RAM	30	50 GB	100 GB	50 GB
Small	300	10k	8 vCPUs, 64GB RAM	100	300 GB	500 GB	500 GB
Medium	600	25k	16 vCPUs, 128GB RAM	300	600 GB	1 TB	1.5 TB
Large	1250	50k	32 vCPUs, 256GB RAM	750	1 TB	2 TB	1.5 TB
XLarge	2500	100k	64 vCPUs, 512GB RAM	1500	2 TB	4 TB	3 TB

Managed Hardware requirements: https://www.dynatrace.com/support/help/shortlink/managed-requirements

While it's useful to do upfront analysis of the required size, it's more important to have the ability to add more capacity to your Dynatrace Managed cluster should your monitoring needs increase in the future.

Clusters should have **equally sized nodes**. A sufficiently sized **3-node cluster** is the recommended setup. Nodes need to have around 10 ms Latency.
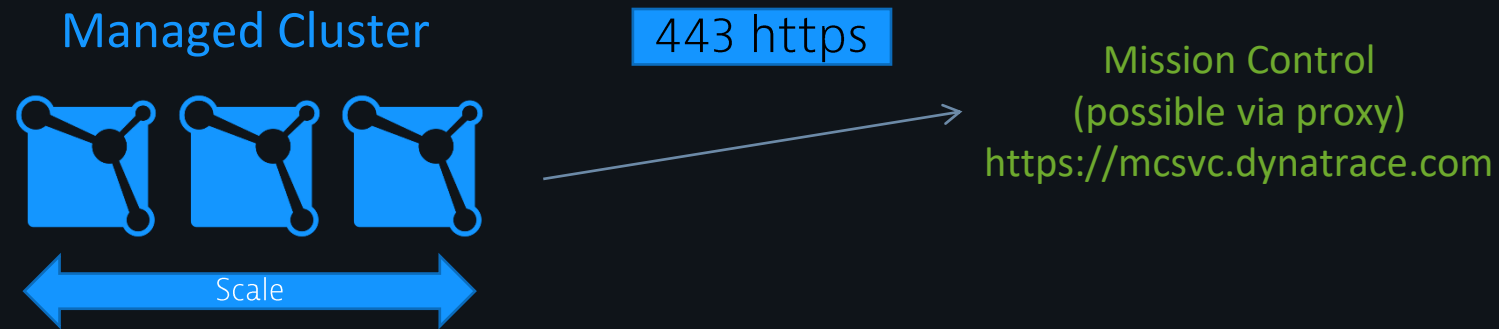For failover, a cluster must have ((# of nodes / 2) + 1) nodes up to maintain functionality and can't lose 3 or more nodes
https://www.dynatrace.com/support/help/shortlink/managed-cluster-failover

Disk space allocation

- Disk space will need to be estimated by the architect.

- It is recommended to have 5 mount points:
    - PRODUCT_PATH (20 GB) - /opt/dynatrace-managed
    - DATASTORE_PATH (50 GB) - /var/opt/dynatrace-managed
    - Cassandra Database - /var/opt/dynatrace-managed/cassandra
    - Elasticsearch storage - /var/opt/dynatrace-managed/elasticsearch
    - Transaction Storage - /var/opt/dynatrace-managed/server/

- Be sure storage can be expanded as necessary.

- Documentation Storage Information: https://www.dynatrace.com/support/help/shortlink/managed-requirements#storage-recommendations

Managed Node Network Requirements

Managed Cluster

443 https

Mission Control
(possible via proxy)
https://mcsvc.dynatrace.com

Scale

- Installing the software will require a connection to Dynatrace Mission Control from each node.

- A connection to Mission Control will also be required after installation.

- https://www.dynatrace.com/support/help/shortlink/managed-network-ports#outbound-communication-to-dynatrace-mission-control

- Communication can be routed via a proxy, but the proxy must allow web sockets and support the SNI TLS extension. Be sure to add the necessary certificates to the nodes for communicating via the proxy.

- https://www.dynatrace.com/support/help/shortlink/managed-proxy#using-dynatrace-managed-installer

Managed Installation

- Follow the instructions in the Welcome Email to install the first node.

- Instructions are also here: https://www.dynatrace.com/support/help/shortlink/managed-cluster-setup

- Add nodes via the Dynatrace CMC (Cluster Management Console) using a browser to the first node.

- Adding a cluster node instructions: https://www.dynatrace.com/support/help/shortlink/managed-add-node

Managed High Availability

High Availability Dynatrace Managed

- Dynatrace supports robust HA with built in cluster resiliency

- Clusters can continue to operate with a loss of up to two nodes

  - 3 node cluster can lose 1 node

  - 5+ node cluster can lose up to 2 nodes

- Requires high bandwidth between nodes

- Requires low latency between nodes

- Targeted as single datacenter solution

- Standard deployment strategy

High Availability Dynatrace Managed

- When deploying across multiple datacenters a number of problems can arise

- Losing more than 2 nodes results in the loss of availability of the entire cluster

Managed cluster

Zone 1
- Dynatrace node 1
- Dynatrace node 2
- Dynatrace node 3

High bandwidth
Spotty availability
High latency

Zone 2
- Dynatrace node 4
- **unavailable** Dynatrace node 5
- Dynatrace node 6
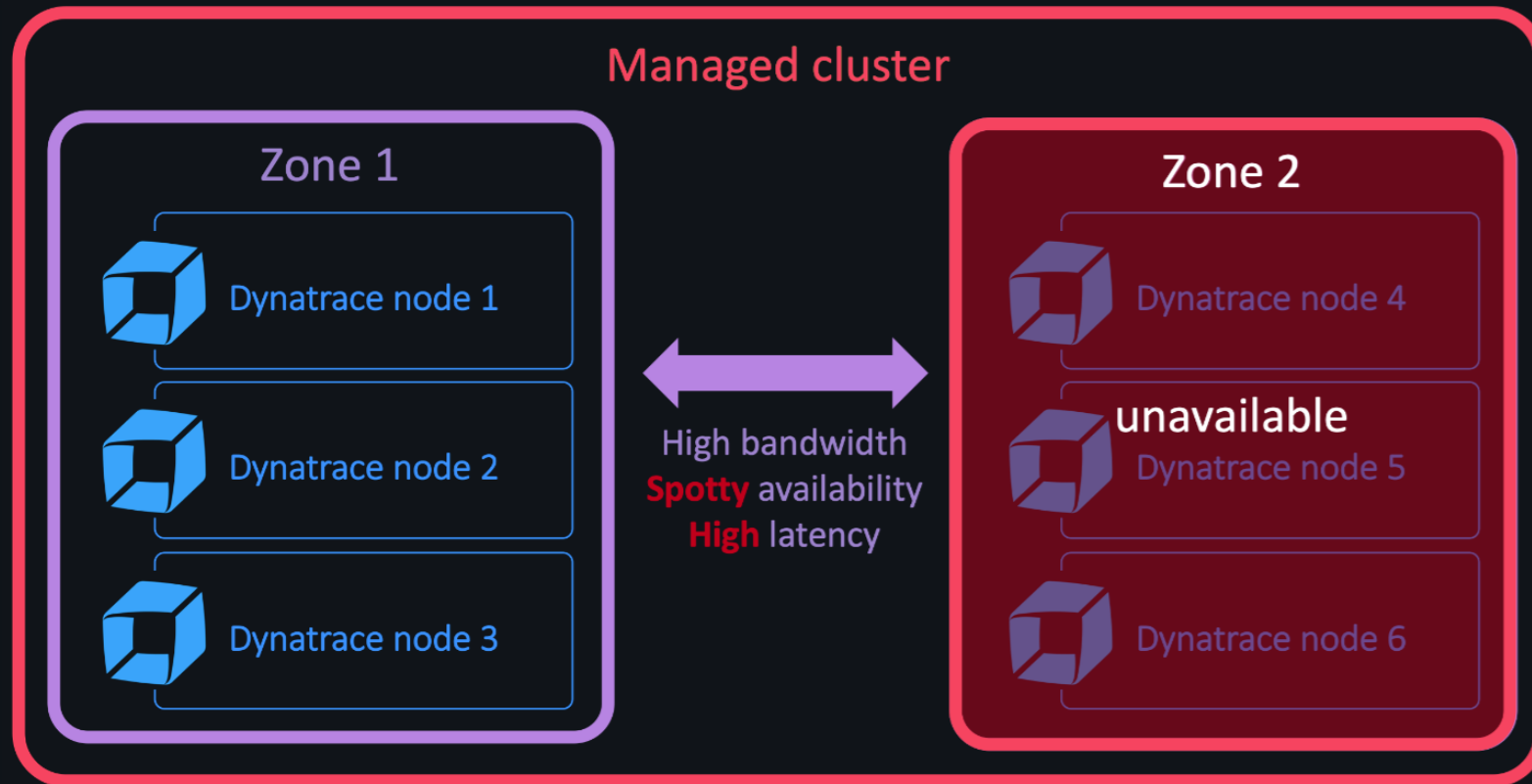
Premium High Availability Dynatrace Managed

- Built to address GRO

- Active-active deployment model for optimum hardware utilization

- Near-zero RPO and RTO—monitoring continues seamlessly and without data loss in failover scenarios

- Automatic recovery for outages for up to 72 hours

- Self-contained turnkey solution

- Minimized cross-data center network traffic

Premium High Availability Dynatrace Managed

- Premium High Availability enhances Dynatrace Managed resiliency

- Allows system functionality to continue with a full datacenter and node loss

Managed cluster

Region 1

Dynatrace node 1

Dynatrace node 2

unavailable

High bandwidth
Spotty availability
High latency

Region 2

Dynatrace node 4

unavailable
Dynatrace node 5

Dynatrace node 6
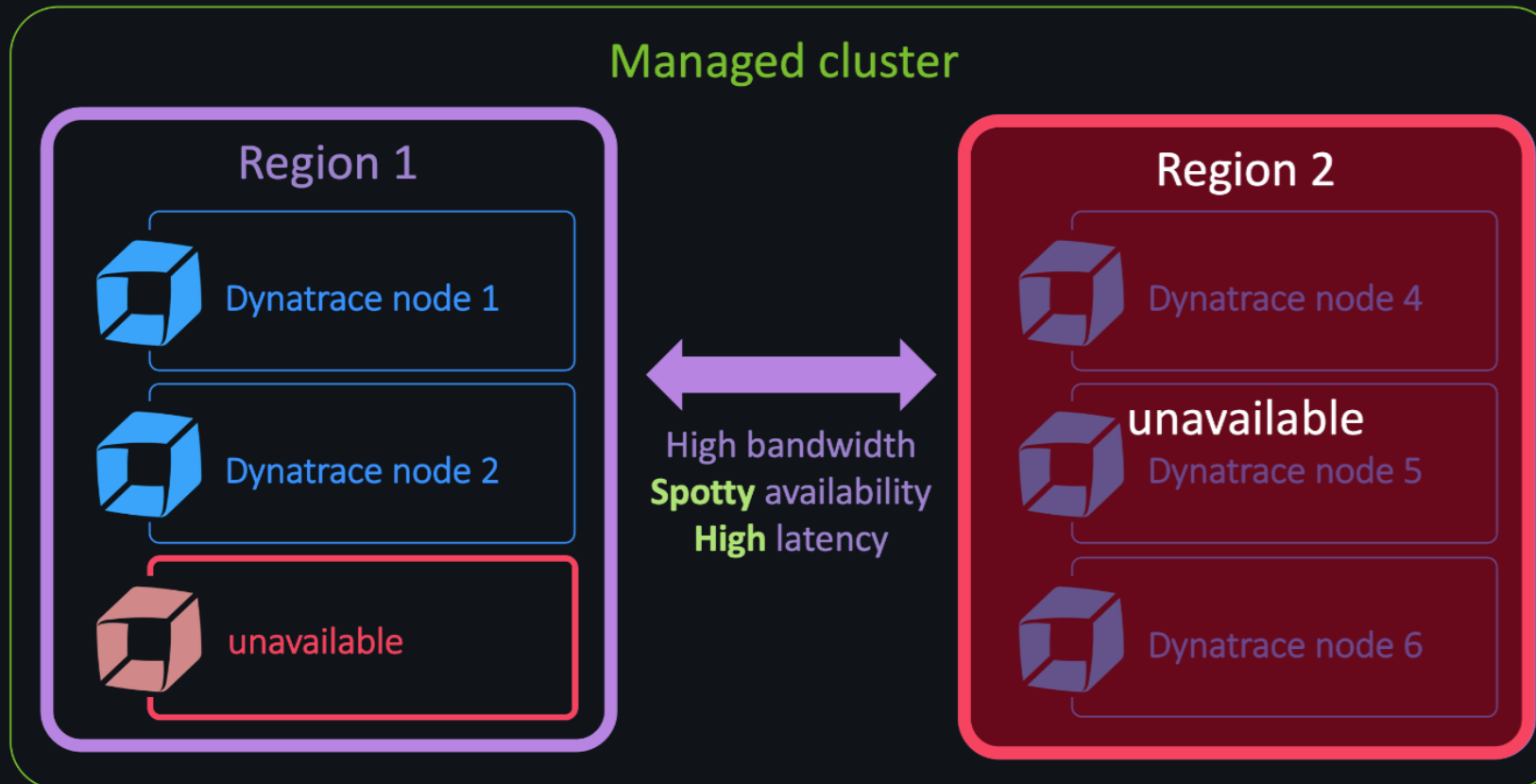
Premium High Availability Dynatrace Managed – How do I get it?

- Premium High Availability is aimed at larger deployments of 1000+ hosts

- Will require a license update - reach out to your Account Executive for pricing and licensing

- Minimum version required is 1.196

- Not available for offline clusters.

- Supports up to 24 cluster nodes (12 nodes per data center)

  - The effective minimum size is 6 nodes (3 nodes per DC)

- Possible to migrate a single-DC cluster to dual-DC Premium High Availability cluster

  - Consult the Enterprise Solutions Architecture (ESA) team for further information

Mission Control
Pro-active Support

Pro-active Support

- Dynatrace Managed relieves you of common maintenance and support challenges

- With pro-active support you get fully automated management capabilities that keep your Dynatrace Cluster secure, reliable, and up-to-date—while saving you from the hassles of administrative tasks like upgrades and troubleshooting

- With your permission, Dynatrace Managed Support staff can even remotely access your Dynatrace Cluster to assist with troubleshooting

- All remote-access requests initiated by Dynatrace ONE staff are logged and tracked along with all other Dynatrace Cluster events

- You have control over which data is sent and which access is allowed

- Additional information about Mission Control: https://www.dynatrace.com/support/help/shortlink/managed-data-exchange

Backups

Backup Sizing

- All important Dynatrace Server configuration files and monitoring data can be backed up automatically

- All cluster nodes should be accessing the same NFS share mounted as a filesystem on each node in the cluster

- The configuration files and Cassandra metrics are contained in an uncompressed tar archive, with one tar file per cluster node, which is updated daily

- Elasticsearch is contained in a snapshot file, which is updated hourly

- Transaction storage isn't backed up as there is frequent turn-over in the transaction data

- Backup history isn't preserved, so the Dynatrace Server keeps only the latest backup

- Network bandwidth utilization is limited to 30MB/s which is appropriate for 1 Gbps connections.

- Size of a cluster backup = ("sum of metrics storage on all nodes" x 0.20) + sum of elasticsearch storage on all nodes

Environments

What is a monitoring environment?

- Dynatrace environments contain all of the monitoring data

- They are independent instances within which root cause analysis and fault domain isolation take place

- Your monitoring environment is where Dynatrace OneAgent sends its monitoring data

- It also includes the dashboards, charts, and reports that you use to stay on top of your environment's performance

- Think of your monitoring environment as the analysis server that provides all application perfurmance analysis and think of your Dynatrace Cluster Servers as your cloud infrastructure within your data center

Multiple Environments

- Generally it is best to have one environment.

- For usability purposes or licensing there may rise a need to have multiple DT environments
  - Sample use cases:
    - To separate Prod from Non-Prod
    - Security or process and procedure requirements
    - Custom data retention periods
    - To handle license allocation

- Agent Deployment
  - Every environment has its own agent (preloaded configurations)
  - Make sure to obtain the deploy script from the specific environment (Dynatrace Hub)

- Navigating between the multiple environments
  - Navigating between different environments can be done by clicking on the Top Right Menu and selecting the environment name

How many Environments do I need?

Dynatrace Component	Level	Use Cases	Control User Access	Cross Transaction Monitoring
Cluster	1	• Separate Physical infrastructure • Separate Data Storage	Yes (Cluster Admin)	No
Environment	2	• License Quotas • Data Retention Control • Control access to global Env. Settings	Yes (per User Group)	No
Host Group	3	• Separate processes into logical groupings • Pass in metadata for tags/naming	No	Yes
Management Zone	3	• Separate Applications, Services, and resources into logical groupings • Control edit access to individual entities • Filter a single tile or entire Dashboard • Global filtering of the data • Filter Alert Notifications	Yes (per User Group)	Yes
Tag	3	• Filter a single tile on a Dashboard • Advanced filtering • Filter Alert notifications	No	Yes

Questions?

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Simply smarter clouds