



The journey to VDI maturity

Accelerate to the autopilot mode with virtual desktop delivery assurance framework

Many large enterprises have deployed Virtual Desktop Infrastructure for thousands of users across their organizations with an intent to transform their workspace. However, there are many challenges that they face in managing the environment.

Enterprises have to right-size the VDI and apps to match user persona, identify the right approach/tools for application assessment, and benchmark performance of VDIs against PCs and laptops. They also have to ensure application OS and desktop OS lifecycle management that involves functional and load testing of new business critical applications, ensuring application compatibility and remediation during tech refresh, handling Windows OS version

updates, etc. A key imperative is to ensure synchronization between application and desktop OS lifecycles to avoid siloed upgrades. On the infrastructure aspect, enterprises have to deal with issues in service availability, capacity planning, performance, vendor coordination, VDI health and user experience management. They also have to be on the top of desktop and application delivery aspects to avert basic operational issues (related to login, desktop/app icons, etc.) and longer provision cycles.

This paper provides a point of view on VDI maturity journey and best practices that help in this transformation.





Virtual Desktop service assurance is complex and demand huge reliable engineering effort in building synergy from disjointed infrastructure, service silo stacks.

VDI is complex

VDI environment is a composite mix of many technology layers, typically consisting of at least 10 layers (See Figure 1). VDI IT admin have to deal with all these technologies and ensure that they fit together well in delivering a decent desktop experience for the end users. Apart from

the native VDI layers, the supporting ecosystem layers (AD, DNS, DHCP, license management, patch management, AV management, configuration management) make the scenario more complex.

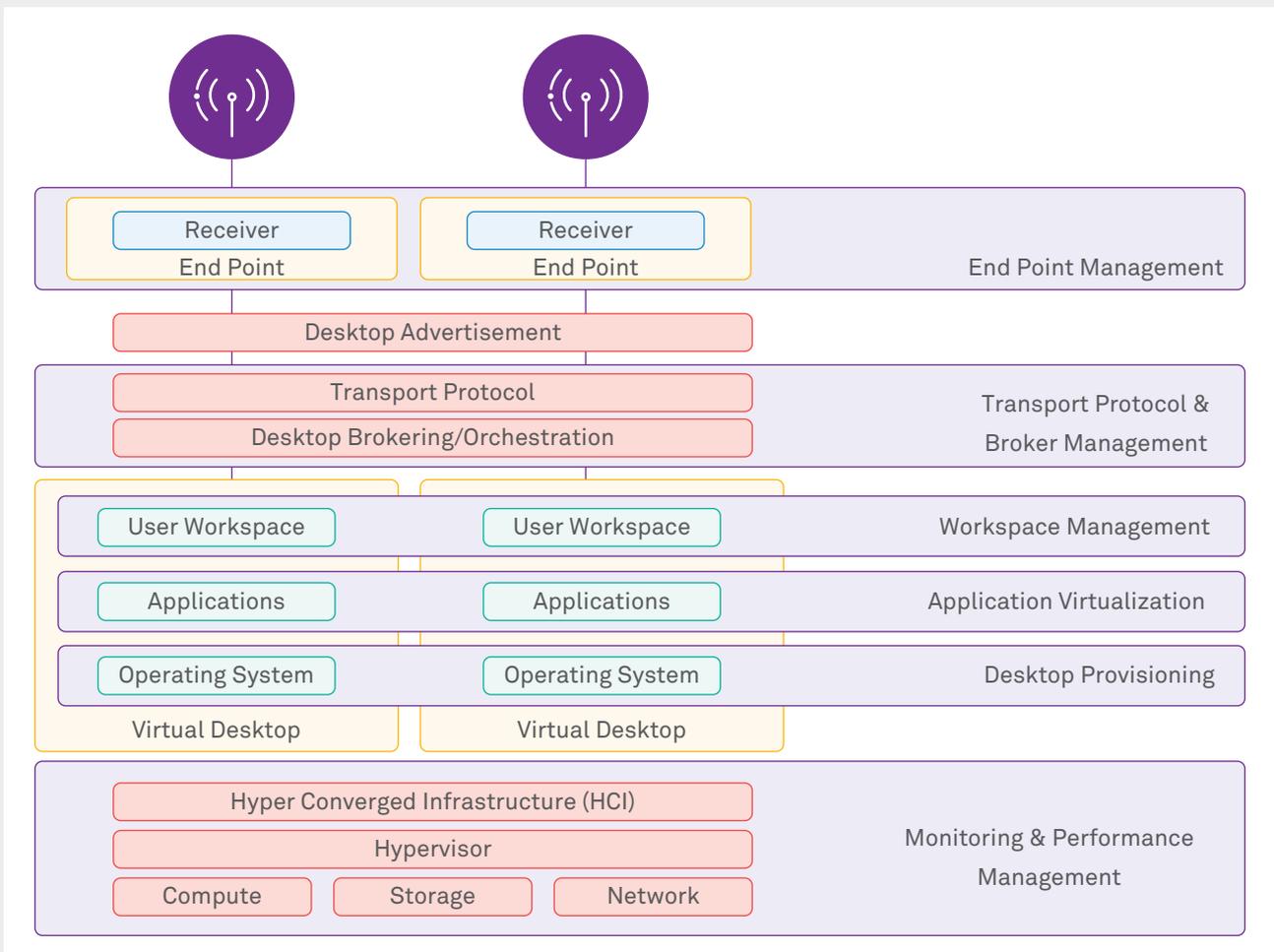


Figure 1: Virtual Desktop Infrastructure layers

As the desktop delivery environment spans across multiple layers, services and components, monitoring and management in silos will not help identify problems and root causes. When a problem occurs, it is unclear what caused the problem: was it network? application? database? server? brokering services? storage system?

Siloed monitoring systems and teams often lead to blame games and passing of issues from one to the other, without actually resolving the problem in time.

In the VDI environment, it is important to have a common dashboard from where the entire infrastructure can be monitored and diagnosed. (Table 1) lists the important points that need to be considered while managing VDI environments.

Monitor VDI service, not silos	<ul style="list-style-type: none"> • Know when user access is slowing • Get 360° performance visibility • Monitor every layer, service and component
Right-size for great ROI	<ul style="list-style-type: none"> • Observe usage and size accordingly • Implement proper capacity management • Identify bottlenecks, top users, and top applications to right-size your environment for maximum ROI • Understand performance trends of virtual desktops and adjust resource allocation to avoid poor end-user experience
Pre-emptive detection & alerting	<ul style="list-style-type: none"> • Right metrics • Baseline key metrics
Monitor users, not just virtual machines	<ul style="list-style-type: none"> • User experience
Deep visibility into sessions	<ul style="list-style-type: none"> • Different views of session resource usage • Analyze activity, usage and latencies for every desktop session to provide insights into the user-perceived performance

Table 1: Important considerations in managing VDI environment



Towards VDI maturity

To leapfrog the journey of VDI, maturity of monitoring and automation need to be enhanced multifold. Smart integration of user experience monitoring, machine learning-driven root cause identification, self-heal automation and prescriptive analytics drives VDI into the autopilot mode.

In the journey to achieve autopilot stage in desktop delivery service, we need to master the activities at various stages (See Figure 2).

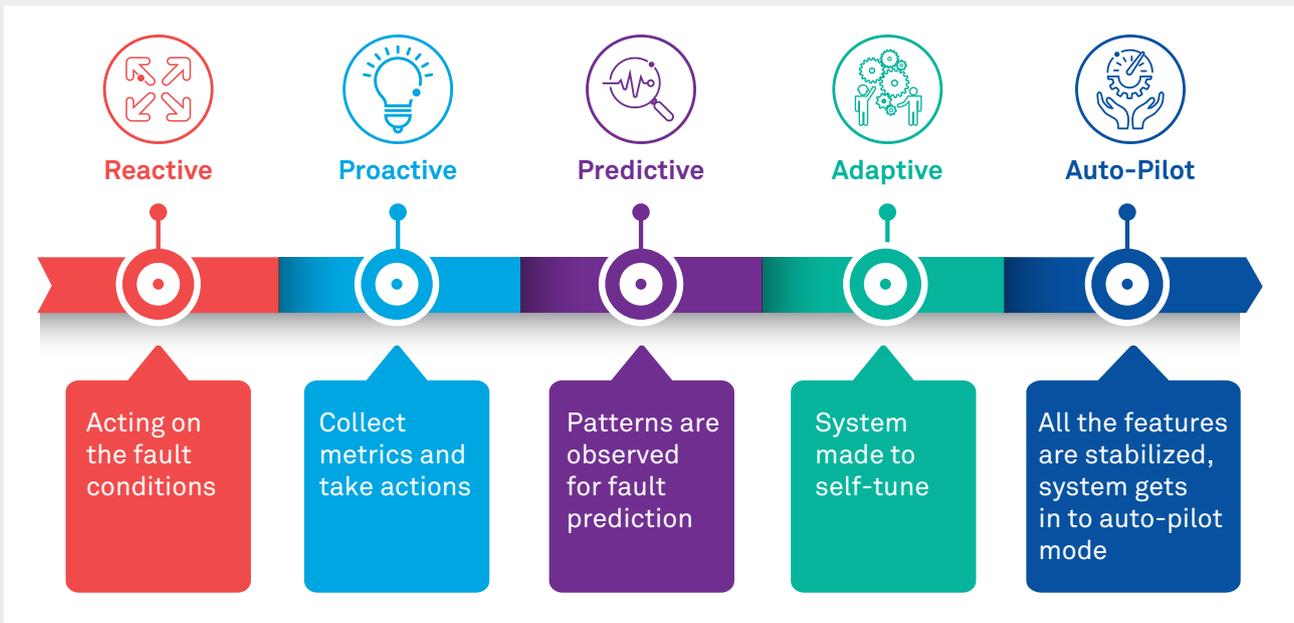


Figure 2: VDI maturity journey milestones



To make system self-sustainable, we need to impart and build various self-managed characteristics into the system management layer. The key ones can be classified as,

- **Self-Aware (Discovery):** Monitoring system should discover changes and start monitoring automatically
- **Self-Test:** System should run self-tests post configuration changes
- **Self-Heal:** System should analyze events/alerts generated and trigger remedial actions automatically
- **Self-Tune:** System should adapt to changes and tune parameters based on nature of usage
- **Self-Service:** System should provide self-service capabilities to end users

An autonomous VDI framework needs to be designed from the ground up with all these ingredients. Monitoring should be built with a strong focus on end-user experience. Infrastructure and site monitoring should be correlated with user experience and improvised actions need to be proposed. Automation engines should be built to trigger self-heal activities to identify and eliminate glitches that affect end-user experience negatively. In addition, run book automation will relieve admins from having to perform mundane daily tasks.

A view of various modes of data collection is highlighted in (Table 2). Proactive-Active monitoring needs to be established for delivery assurance.

	Active	Passive
Reactive	Used to diagnose which device is causing the failure and under what conditions (e.g. 'ping' a device, or run and track a sample transaction)	Detects and correlates event records to determine the meaning of the events and the appropriate action
Proactive	Used to determine the real-time status of a device, system or service – usually for critical components or following the recovery of a failed device to ensure that it is fully recovered	Event records are correlated over time to build trends for proactive problem management and patterns of events are defined and programmed into correlation tools for future recognition

Table 2: Data monitoring strategies

To gain control over desktop delivery service, we need to understand and master various layers that form typical services for application and

desktop virtualization. A desktop delivery assurance framework consists of various logical layers (See Figure 3).

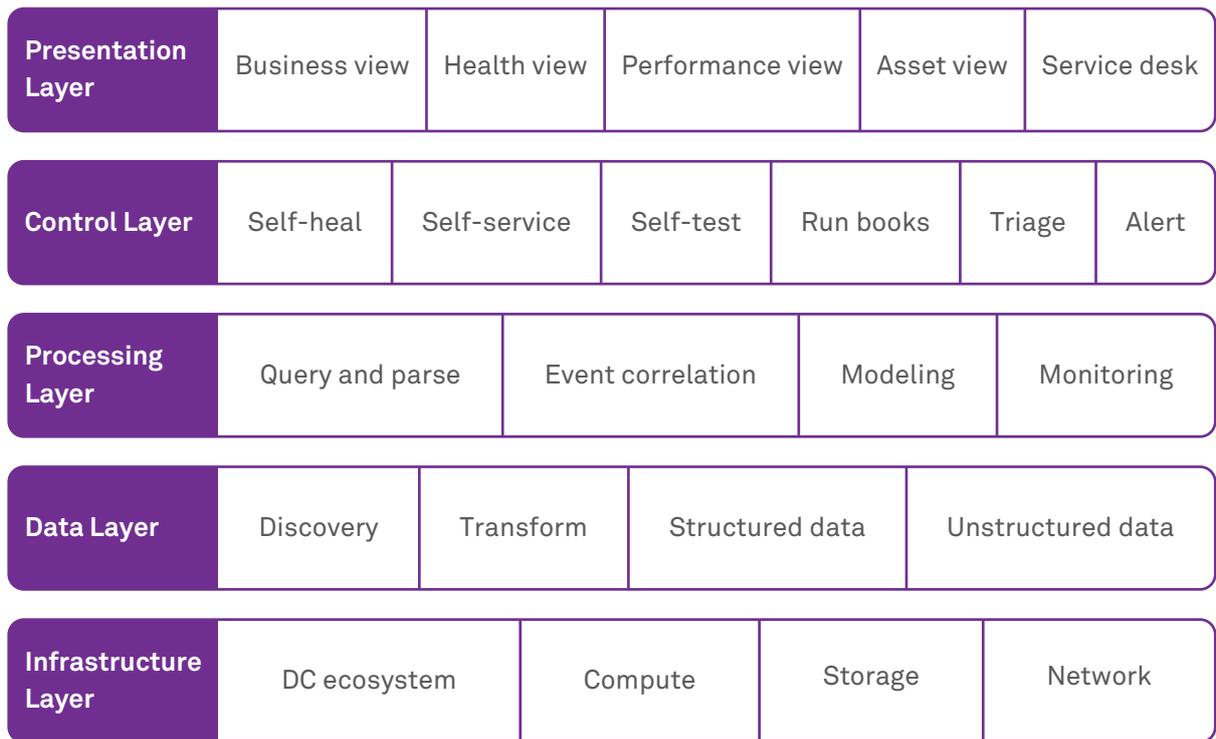


Figure 3: VDI management Stack



- Presentation layer enables searching, browsing, retrieving, updating, subscribing, and collaboration and presenting of different views of all the other layers as suitable for different audiences
- Control layer represents a decision making function. Tools in this layer will trigger actions such as automatic remediation, raise alerts/tickets
- Processing layer is where the information is converted into useful knowledge which enables decision-making
- Data layer includes tools for data discovery and data collection, and data items in unstructured and structured forms
- Infra and Configure layer is a logical representation of various sub-systems that constitute the desktop delivery. It includes compute, storage, network systems, as well as configuration and provisioning services

Four pillars of the virtual desktop delivery assurance framework

The VDI autonomous framework consists of four pillars:

1) End user experience focused health monitor, topology view: Central portal that captures health data of globally distributed sites and provides analytics and trends across multiple sites. Predictive analytics on the site's health and capacity helps prioritize activities for central support teams while automated reports ensure continuous ongoing monitoring. This health monitor should be built keeping end-user experience and service availability as the primary focus points.

2) Real-time monitoring system: Real-time monitoring systems installed in each site have trend dashboards for event correlation, data warehouse for reporting, and the ability to perform self-heal tasks. Typically, these can be built as extensions to generic monitoring frameworks such as SCOM. Management packs

can be developed for monitoring site components, user experience, operational conditions and performance.

3) Unified analysis and automation tool:

Integrated tool that provides real-time debugging for failure analysis, automation for lifecycle activities and self-heal capabilities. It also performs virtual desktop registration checks, and event analysis.

4) Desktop/application availability monitoring

Bot: A test tool that performs E2E channel testing - right from the end-points up to desktops running in data center. It simulates the login process locally to identify failures/ end user issues proactively, generate application/desktop availability alerts, and identify the layer that is causing the issue. The tool supports testing of multiple delivery groups and both local as well as remote launch modes are supported. It enables comprehensive coverage spanning the network, VDI site, and data center support services.

These pillars enable 360° coverage, which is essential for autonomous framework to fulfil the autopilot objective.

Conclusion

VDI solutions offer tremendous benefits to organizations in terms of manageability, performance, security, and other benefits. However, if proper planning and care is not taken, VDI engagements may lead to frustration for all stakeholders. It can result in bad end-user experiences, high maintenance costs, unpredictable and unreliable service, and IT team frustration. By proper planning, engaging right framework/tools, and adapting best practices, organizations will achieve successful, effective, and problem-free VDI deployments.

About the author

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